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EDGAR J. BUTTENHEIM, Pres. and Mgr.
HAROLD S. BUTTENHEIM, Editor
THEODORE R. KENDALL
Secretary and Engineering Editor
M. V. FULLER
Associate Editor
HERBERT K. SAXE
Treasurer
PRENTICE C. FORD, Asst. to President — MYRON MacLEOD, Advertising Manager

BRANCH OFFICES
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TOM DIX, Vice-President
642 Hanna Building, Cleveland
GEORGE S. CONOVER, Manager
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In THE MUNICIPAL INDEX (the annual reference volume of data and condensed catalogs published by the American City Magazine Corporation) readers will find much material, including lists, and articles on a wide variety of municipal and civic subjects, not published in the monthly issues of the magazine.

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IMMEDIATE SHIPMENT FOR CWA CONSTRUCTION

Use a portion of your CWA appropriations to repair, improve and extend your local water works system. In this way you get *lasting benefits* from the expenditures of this temporary employment agency.

Pipe line construction is ideal CWA activity; it involves large amounts of hand labor and can be started on short notice.

We are prepared to rush Mono-Cast Centrifugal Pipe to you from our stocks maintained at strategic points throughout the United States, or direct from our plant at Birmingham. Special attention is given to CWA and PWA orders.

Make The Most Of This Opportunity!

See list of Branch Offices below and communicate immediately with office nearest you.

AMERICAN CAST IRON PIPE COMPANY

BIRMINGHAM, ALABAMA

Chicago New York City Kansas City Cleveland Dallas
Minneapolis Los Angeles Seattle San Francisco

Public Works–City Credit–Housing

In 1933, Promise In 1934, Performance

THERE are valid reasons for optimism as to greatly increased public works construction and greatly decreased unemployment in the year just opening. Needed safeguards and unneeded red tape—combined too often with local inertia—resulted in the actual spending during 1933 of only a small fraction of the $3,300,000,000 appropriated for public works and housing under the NIRA. Tentative allotments have been made, however, by the PWA and the CWA of practically all of this 1933 appropriation.

The result will be that the bulk of the three-billion-dollar fund—and doubtless some additional billions to be voted by the 1934 session of Congress—will go into labor, materials and equipment during the twelve months immediately ahead. Other applications from municipalities, counties and states will enable the reasonably prompt spending of such additional sums as the Federal Government may provide. Indeed, there seems to be little doubt that not less than five billion dollars of Federal funds could be wisely spent on public works and housing projects during 1934—a total large enough to have a real effect on the nation-wide restoration of prosperity.

Mayors Ask Additional Two Billions or More for Local Public Works

DEPLORING the fact that the great majority of the funds already allotted out of the $3,300,000,000 PWA appropriation have been for strictly *Federal* projects, the Executive Committee of the United States Conference of Mayors on December 15 adopted a resolution reading in part as follows:

"If people are to be put to work where the need for work exists, it is apparent that local projects offer the greatest opportunity in this direction. . . . Unless a new appropriation is made, hundreds of needy projects now before the Public Works Administration will of necessity be abandoned, since the funds now remaining are only sufficient for a small number of additional allotments. Under the stimulation of the national recovery measures many communities have gone forward in developing useful public projects, with these same communities fulfilling their responsibilities by pledging their own funds and resources to help defray the cost. If an additional appropriation is not provided, all of these projects will be nothing more than idle plans for giving people work.

"In 1932, when the United States Conference of Mayors was the first national agency to sponsor a public works program, it was recommended that a five-billion-dollar appropriation be made. At this time, we believe, at least two billion dollars should be provided with most of this new fund to be used for local public works. The stringent tax and financial situation confronting practically all cities dictates the need for liberalization of the existing statute."

Federal Aid Urged for Municipal Credit

THAT city government in the present emergency should have at least as much consideration as private enterprise in the extension of Federal credit, was also urged by the Committee of Mayors at the above mentioned meeting.

MUNICIPAL CREDIT SITUATION

"Municipal credit, similar to all other types of credit, has been in a state of collapse for the past year. Not only is the market for short-term municipal securities (tax anticipation notes, warrants and bonds) severely limited, but the cities are finding it increasingly difficult to dispose of long-term municipal bonds. The results of this are of course reflected not only in curtailed governmental services such as schools, health and police and fire, reduced pay for most public employees and payless paydays for others, but in the forced use of scrip, and even in defaults. Since municipal government is the foundation stone of democratic government, this condition, too often lightly dismissed, is most serious and is a definite drag upon steps taken by the National Government leading toward economic recovery.

"The causes of this are in part due to the inability (and in some cases unwillingness) of the citizen to pay his taxes. Banking institutions also offer as an excuse the existing uncertainty of the monetary and currency situation. Without appraising these elements, the fact remains that public bodies today are face to face with the inability to finance the operation of essential governmental services.

"To bolster banks, railroads, building and loan associations, farm owners, home owners and many other institutions and groups, the Government has found it possible to extend credit of a legitimate character without impairment to the financial structure of the National Government. It would seem that city government itself, in times of stress, should be treated on a parity at least with private enterprises. We therefore urge extending credit to public bodies on sound collateral at reasonable interest rates in order that needed services of government may be maintained.

"If this step be impossible, we respectfully urge a thorough study by the Federal Government of alternative possibilities in the way of easing present credit channels. It is our belief that rediscount privileges through the Federal Reserve system would be of considerable assistance, as well as changes in the regulations now governing the type of collateral eligible for security against Federal and postal savings deposits.

"It is our belief that from the standpoint of the taxpayer, now burdened by a huge public debt, it will ultimately be necessary to establish a *Federal agency which shall serve as the fiscal agent for the governmental units of the United States.* This agency would have under its supervision a credit pool sufficient to care for the needs of the subordinate governmental units throughout the nation.

THE PROBLEM OF DEFAULTS

"Intensive studies of public defaults indicate clearly the necessity for some Federal legislation which will establish an orderly and equitable procedure for solving this acute problem. We urge intensive consideration to the end that default may be cleared up, the rights of creditors protected, and the credit of solvent municipalities safeguarded.

"Notwithstanding the fact that the governmental units throughout the nation have weathered the storms of economic depression far more successfully than private enterprise, with the result that only a few units have been forced to default on their obligations, it is apparent that the present situation must be remedied. The states individually are powerless to act in this connection. At the last session of Congress efforts were made to enact legislation of the character needed, and we urge the passage of this legislation."

Emergency Housing Corporation Signs First Agreement

ENTRANCE of the Public Works Emergency Housing Corporation into Cleveland, Ohio, to carry out an extensive low-cost housing and slum-clearance project was announced today by Harold L. Ickes, Federal Public Works Administrator and President of the Federal Corporation. Housing construction ranging from $3,600,000 to $12,000,000, as deemed advisable, was provided for in this first agreement signed by the Public Works Housing Corporation.

Besides making widespread building trades employment possible, the construction will open the way to housing of a class and price believed non-existent in the locality at present. The housing, consisting of two- and three-story structures as first planned was set up to rent at from $8.00 to $8.50 per room per month. Under the Government Housing Corporation it is believed that rents below these figures can be achieved.

The agreement is between the corporation and a group of Cleveland citizens, all of whom are officers or members of the Board of Directors of Cleveland Homes, Inc., and provides for the execution of part of the Cleveland Homes, Inc., plan as a Federal project. Signers in behalf of Cleveland were Leyton E. Carter, Lawrence H. Norton, Charlotte Rumbold, Edwin Baxter, George A. Bellamy, Morris A. Black, Harold H. Burton, Judge Harry L. Eastman, Paul L. Feiss, J. C. McHannan, Fred W. Ramsey, and Dr. Charles P. Twing.

Under the agreement the Public Works Emergency Housing Corporation proposes to construct all or a part of the Cleveland project, for which provisional allotment of $12,000,000 to a limited dividend housing corporation had been made by the Federal Emergency Administration of Public Works early in the fall. It is indicated that the part of the project first to be undertaken by the Public Works Emergency Housing Corporation will involve an outlay of $3,600,000. This part of the project embraces an area of about 16 acres and is to provide about 3,500 rooms.

The Committee has agreed to undertake to make available to the Public Works Emergency Housing Corporation all plans, specifications, information, data and options thus far procured and developed in connection with the project, in order to facilitate the operations of the Public Works Emergency Housing Corporation in Cleveland.

SPECIFY MATHEWS

For Accident Insurance

To break a Mathews Hydrant means somebody must wreck a car. Its owner has to stay and pay damages, after he meets this double strength of sand-spun barrel and protection case.

What is more important, repairing a Mathews is *not* expensive. No matter where it's broken, you can easily screw out the pieces and insert another barrel. Half an hour's work is cheaper than 2 days' digging!

It only costs you one letter to get the full facts.

"SAND-SPUN" PIPE

NO BETTER PIPE THAN "SAND-SPUN" IS MADE. A PRODUCT FUNDAMENTALLY DIFFERENT FROM PIT-CAST PIPE. NO ANNEALING IS NECESSARY—16 ft. lengths furnished in all sizes 4 ins. to 36 ins. inclusive. 20 ft. lengths also furnished in sizes 12 ins. to 30 ins. inclusive . . . We are prepared to ship by water, rail or truck.

R·D·WOOD & CO · ESTABLISHED IN 1803 · 400 CHESTNUT STREET PHILADELPHIA

Water Supply and Purification

HISTORY OF WATER SUPPLY

The Water Seller

A PICTURESQUE figure of the middle ages was the itinerant water seller who hawked his service through the streets. In some parts of Europe this custom still exists after hundreds of years, so slow are people to change their habits.

We know that water sold by this method is subject to all kinds of contamination. How much more satisfactory, though less picturesque, is the modern American water works system which brings an abundant and pure supply of water under pressure to the home.

NO. 7 OF A SERIES OF WATER ADVERTISEMENTS USED IN LOCAL NEWSPAPERS BY THE AMERICAN WATER WORKS & ELECTRIC CO.

The Task of Water Purification in the Reduction in Typhoid Incidence

UNTIL a very few years ago waterworks engineers and sanitarians centered their energies on the application of weapons known to be effective in a wholesale way against the scourge of typhoid fever, cholera and some other food- and drink-borne diseases. Among the principal of these weapons were filtration of public water supplies, pasteurization of milk supplies and typhoid inoculation.

The first of these in the field, and unquestionably the most important and effective, was filtration of public water supplies. Its value was appreciated by a few as early as 1885, but it was not until the dramatic demonstration of the efficacy of filtration in 1892, when Hamburg, Germany, suffered a severe epidemic of water-borne cholera, while the adjoining city of Altona was saved by filtration. From this time on, public water supplies were improved by filtration and later by disinfection (with and without filtration) at an increasingly rapid rate, with the result that at the present there are very few water supplies obviously liable to pollution that are not receiving systematic treatment.

The effect has been a continuous reduction in deaths from typhoid fever during the thirty years of active expansion in the purification of public water supplies. Perhaps all of this reduction cannot be ascribed to water-supply treatment; some of it undoubtedly is due to pasteurization of milk supplies and to anti-typhoid inoculation, but there is evidence in the statistical data that safe public water supplies have had by far the major influence.

—From a paper by PAUL HANSEN, of Pearse, Greeley & Hanson, consulting engineers, Chicago, Ill., presented before the American Water Works Association.

Lindsay, Ont., Saves $500 a Year in Power Costs

THE installation of a 300,000-gallon elevated tank has saved the city of Lindsay, Ont., over $500 in the cost of fuel and power to operate its water-works system per year, as the elevated tank acts as an equalizing reservoir in the system, allowing the pumping station to be operated at a uniform rate and thus reducing the hydro peak charge.

Lindsay is a city of about 7,200 population covering an area of 1.75 square miles. Its water-works system was installed in 1893 and uses the Scugog River as its source through two 12-inch gravity intakes. The pumping equipment consists of two Dean compound duplex steam pumps with a capacity of 1,080,000 gallons, a 1,440,000-gallon Allis-Chalmers centrifugal pump and a 1,440,000-gallon DeLaval centrifugal pump. The latter unit is connected so that it can be driven by a 75-hp motor when used for domestic service and by a 145-hp Sterling gasoline engine when used for fire purposes. The filter equipment consists of five mechanical type units, each rated at 432,000 gallons, or a total of 2,160,000 gallons per 24 hours. Deep-well contractors recently completed a three-well system to furnish 1,800,000 gallons per 24 hours additional supply.

The distribution system consists of 25 miles of mains ranging from 4 to 16 inches in diameter. The pumping station is on the river bank in the southeast portion of the city, and the elevated tank furnished by the Chicago Bridge & Iron Works is located in the west central section of the town. The water works has a total of 2,200 consumers. The average daily consumption is 780,000 gallons, with a minimum of 600,000 gallons per day and a maximum of 1,200,000 gallons per day.

The pumps are operated at a uniform pressure of 80 pounds per square inch except during hydro peak hours, when they are shut down entirely and the elevated tank provides the entire supply. Operating this manner results in a saving of 10 per cent in power cost.

The installation of the elevated tank enables the pumping station operators to get rid of anchor ice at the intake pipes during the winter season without inconvenience such as was encountered previously when the system was supplied by direct pressure with no reserve supply.

Prior to the installation of the tank, it was necessary to boost the pressure at the pumping station in case of a serious fire. In October, 1932, the worst fire hazard in the business district was completely destroyed. Three hose streams from a La France fire pumper and four hose streams from hydrants supplied 1,920 gallons per minute steadily for four hours, during which time the pressure at the pumping station was not raised above that required for domestic purposes.

Service Leaks

SERVICE leaks are of many varieties. In tapping the main, the drill may be over-run, and the cock, screwed down to the face of the pipe, does not take up tightly enough to hold water. Wiped joint leaks are very common and may be due to settlement, causing a crack, or to poor workmanship. Galvanic action between the metals may in course of time destroy enough metal to cause a leak. Leaks at the curb-cock may be due to any of the above causes or to careless handling of a shut-off key. These leaks are all very apt to increase in size by sand-blast action of grit picked up by the water hitting the brass or lead.

The causes of leaks in the service pipes themselves are too well known. Corrosion of iron pipe, from either the inside or the outside, and freezing are perhaps the most usual reasons for failure, but water-hammer caused by quick-closing valves sometimes is to blame. Leaks at the meter are usually due to careless workmanship in making up the joints.

—From a paper by ALFRED E. SKINNER, Western Manager, The Pitometer Co., presented before the American Water Works Association.

HISTORY OF WATER SUPPLY

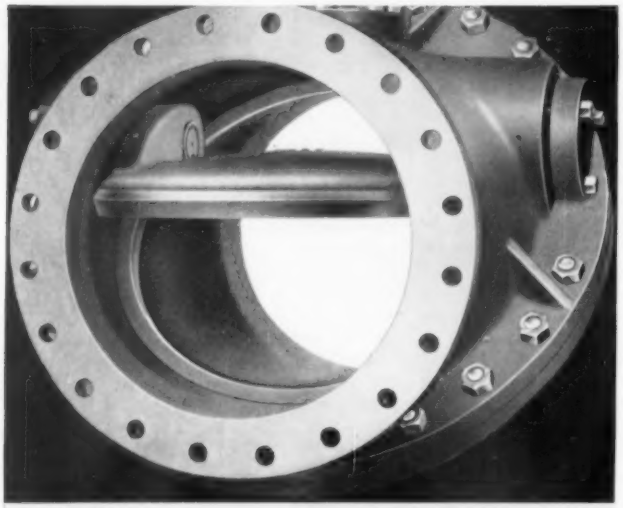
WATERWORKS, Early American Style

WHEN that backwoods genius, the Hon. Davy Crockett, made his memorable tour of the United States, none of the many strange sights impressed him quite as much as the early water works at Philadelphia. "Just think," he wrote, "of a few wheels throwing up more water than 500,000 people can use. Such scrubbing of steps, and even the pavements under your feet, I never saw! I looked to see if the housemaids had not webbed feet. As for a fire, it has no chance at all."

Yes, the Philadelphians, no less than their visitors, counted their waterworks among the wonders of the world. Yet this early system, with its wooden mains, uncertain pressure, and outdoor hydrants, was a primitive thing compared to that which, at all hours of day and night, brings to the homes of this city a water supply that is pure, abundant, unfailing.

NO. 11 OF THE SAME SERIES OF ADVERTISEMENTS USED IN LOCAL NEWSPAPERS BY THE AMERICAN WATER WORKS & ELECTRIC CO.

Prevent
WATER HAMMER

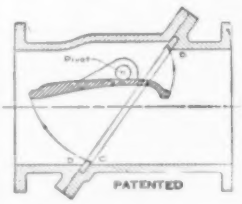


WITH
CHAPMAN
NON-SLAM CHECK VALVES

You can now eliminate slamming of check valves—the direct cause of water hammer and resultant destructive stresses in pipe lines. CHAPMAN'S Non-Slam Check Valves operate on a new scientific principle which definitely prevents slamming by means of a self-cushioning feature.

The balanced disc in the CHAPMAN Valve closes quickly and quietly, due to the cushioning effect of the stream against the short flap of the disc. And when open, it rides steadily on the flow without flutter which eliminates the constant replacement of hinge pins and bearings. When the disc is closed, it is drop-tight.

In addition to preventing slamming, CHAPMAN Non-Slam Check Valves are also cutting maintenance costs and saving power for their many users . . . on water, oil, gas and air lines. They'll do the same for you. *Write for descriptive bulletin.*



The Balanced Disc requires very little force to hold it off its seat, reduces head losses 75%.

THE CHAPMAN
VALVE MANUFACTURING CO.
INDIAN ORCHARD, MASSACHUSETTS

PITTSBURGH DES MOINES

500,000-gallon capacity, 50-foot diameter tank, City of Ludington, Mich.

A Double Ellipsoidal Tank with Water-Containing Roof

In the tank illustrated above, the water extends up into the roof 9½ feet. The extra thick roof plates required to withstand this water pressure, increases the self-supporting quality of the roof, reducing or entirely eliminating the necessity of roof supports. The capacity of the roof cuts down the capacity required in the balance of the tank.

The result — **a net saving in cost** — for tanks of equal or greater diameter.

Pittsburgh-Des Moines Steel Company

Steel Tanks for Any Purpose
Steel Plate Fabrication
Municipal Garbage Incinerators

3412 Neville Island, Pittsburgh, Pa.
913 Tuttle St., Des Moines — Room 915, 270 Broadway, New York
Chicago Dallas Seattle San Francisco

Water Meters Check Revenue Losses

Cambridge, Mass.

IN 1900 the population of Cambridge was 92,308, 6 per cent of the water services were metered and the average daily consumption per capita was 79 gallons. In 1910 the population had increased to 103,000, the metering to 27 per cent, and the consumption to 98 gallons per capita daily. In 1920 the population was 114,900, the services were 44 per cent metered and the consumption 95 gallons per capita daily. In 1930 the population was 125,000, the services were 64 per cent metered and the consumption 104 gallons per capita. Today the population is 125,000 and the system is 90 per cent metered. The average daily consumption is 98 gallons. This steady increase in the average daily consumption per capita is typical of a growing industrial city.—TIMOTHY A. GOOD, General Superintendent.

Brainerd, Minn.

METERS were first installed in Brainerd in January, 1921. Before that time the two present commercial pumps ran 24 hours daily. Now the same pumps run alternately one week at a time, one pump running 14 hours daily, a saving of 34 hours of use of the pumps besides the wasted water. The city furnishes the Northern Pacific Railway Co. about 100 million gallons of water annually, and an even larger volume of water was furnished to them for the first four years after meters were installed, but now they repair all their lines where they find large leakage, and they also economize in the use of water.—W. D. MCKAY, Secretary.

Minneapolis, Minn.

THE maximum reduction in per capita consumption in Minneapolis was accomplished about 1917, when the services reached 100 per cent metered. The increase in per capita consumption since then is the result of increased use of water due to the installation of a filtered supply replacing raw water, which was used in 1913 and prior to that date. In 1900 the population was 202,000, the services were 33 per cent metered and the average consumption was 92 gallons per capita daily. In 1910 the population was 301,000, the services were 79 per cent metered and the consumption 74 gallons per capita daily. In 1920 the population was 380,000, the services were 100 per cent metered and the consumption was 98 gallons per capita daily. In 1930 the population was 464,000, the services were 100 per cent metered and the consumption was 115 gallons per capita daily. In 1932 the population was 470,000, the services were 100 per cent metered and the consumption remained at 115 gallons per capita daily. The following figures stating the surplus per million gallons earned by the Water Department with the rates are interesting as showing results which can be obtained in a well-operated water department.

Surplus Per Million Gallons	Earned Gross	Rate
1900	$17.30	8 cents
1910	28.82	8 cents
1920	20.09	8 cents
1929	20.37	8 cents
1931	22.33	10 cents

—J. A. JENSEN, Superintendent.

Bismarck, N. Dak.

THE water-works system of Bismarck was acquired by the city from a private company on December 1, 1923. The population at that time was 8,300, and 78.5 per cent of the domestic services and 100 per cent of the industrial services were metered. The average daily consumption was 87 gallons per capita. In 1930 the population had increased to 11,090, with 95.5 per cent of the domestic services and 100 per cent of the industrial services metered, and the average daily consumption per capita had dropped to 71 gallons. This was still further reduced to 67 gallons per capita daily in 1932, with 96.5 of the domestic services and 100 per cent of the industrial services metered, and a population of 11,888.—MYRON H. ATKINSON, Manager, Water Department.

Reading, Pa.

IN 1900, when the population of Reading was approximately 79,420 and none of the domestic services were metered and 80 per cent of the industrial services metered, the average daily consumption was 91.7 gallons per capita. In 1910, with a population of 96,950 and 10 per cent of the domestic services and 100 per cent of the industrial services metered, the consumption was 130.2 gallons per capita daily. This still further increased to 151.5 gallons per capita daily in 1920, when the population was 108,365 and the domestic services were 55 per cent metered and the industrial services 100 per cent metered. Control of the situation began to show up just prior to 1930, for in that year the average daily consumption was reduced 104 gallons per capita daily, with all of the services metered and the population 117,000. The population was 119,050 in 1932, all services were metered and the consumption had dropped to 89.0 gallons per capita daily.—A. R. O'REILLY, Chief Engineer, Bureau of Water.

Greeneville, Tenn.

OWING to many changes in the water works between 1920 and 1932, it is difficult to compute the actual savings in cash which have been effected through the universal metering of the system. The actual savings in cost due to the reduction in consumption of water have amounted to about 50 per cent. Another large saving was effected by deferring an expense of $88,000 for an additional water supply for a period of ten years, due entirely to the installation of meters. In 1920 the population of Greeneville was 3,775, the domestic services were 15 per cent metered, the industrial services 80 per cent metered and the average daily consumption was 117 gallons per capita. In 1930 the population was 5,775, the domestic services were 80 per cent and the industrial services 100 per cent metered. The average daily consumption had dropped to 71 gallons per capita. In 1932 the population was 6,200, the services were 100 per cent metered and the consumption was reduced to 60 gallons per capita daily.—J. W. MCAMIS, Superintendent, Water Works.

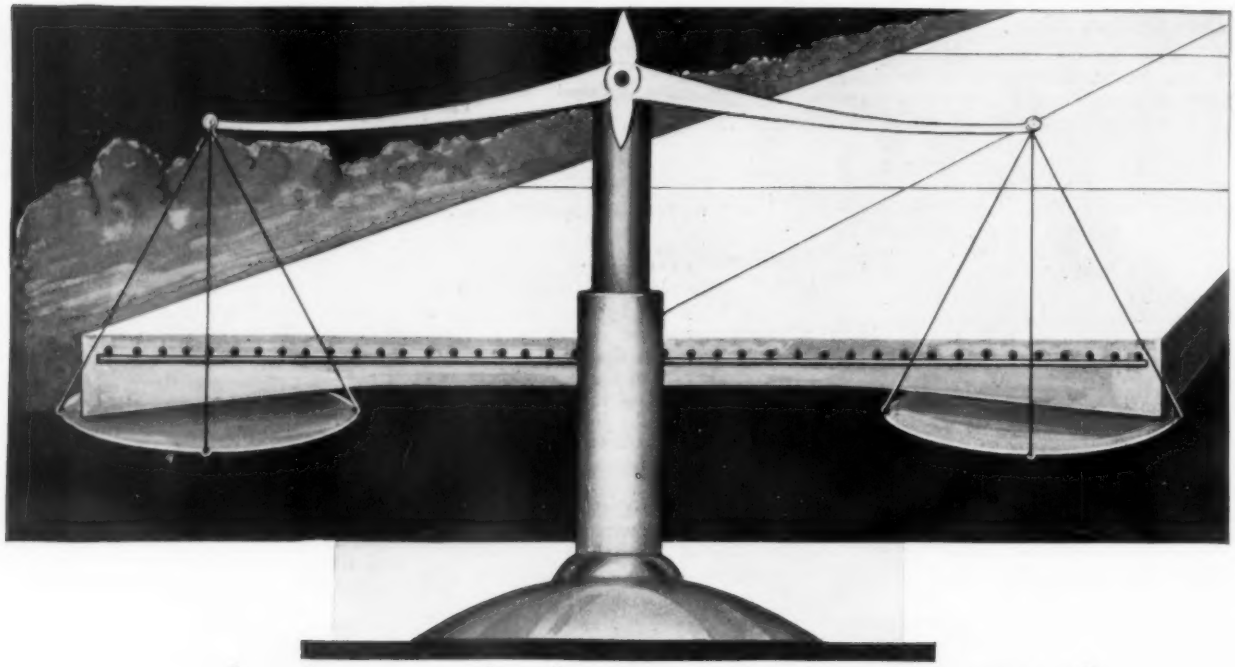
Del Rio, Texas

THE experience of Del Rio, Texas, when meters were first installed was that the revenue began to show a small increase in spite of the fact that the rates were reduced 33 1/3 per cent. In 1908, when the population was only 2,000 and there were no meters, the average daily consumption was 100 gallons per capita. In 1910, when the population was 3,000 and there were no meters, the daily consumption had increased to 120 gallons per capita. In 1920 the population had increased to 3,800, and 75 per cent of the domestic services and 10 per cent of the industrial services were metered. This resulted in the reduction of the water consumption to 80 per capita daily. In 1930, with a population of 7,000 and 80 per cent of the domestic services and 15 per cent of the industrial services metered, the consumption was 88 gallons per capita daily. In 1932, with a population of 11,500 and universal metering in force, the consumption was reduced to 75 gallons per capita daily, therefore enabling us to again increase the minimum from 7,500 gallons to 10,000, or a reduction of about 10 per cent from all rates without increase in operating cost to the city to Del Rio, which owns and operates the system.—A. HERZING, Water Superintendent.

El Paso, Texas

EL PASO, Texas, was the third city in the United States to be 100 per cent metered. About one-third of the consumption is used for irrigation for trees, grass, shrubs and flowers. The low per capita consumption for this arid region is due to 100 per cent metering, which has been in force since 1900. In 1900 the population was 20,000 and the consumption 27 gallons per capita daily. In 1910 the population was 40,000 and the consumption 81 gallons per capita daily. In 1920 the population was 80,000 and the consumption 79 gallons per capita daily. In 1930, with the population 102,000, the consumption was 81 gallons, and in 1932, the population was estimated as 98,000 and the per capita consumption 80 gallons daily.—A. L. HAWLEY, Supt., City Water Works.

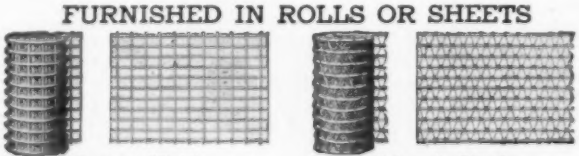
IN ROAD CONSTRUCTION



a balanced design is essential

A BALANCED design reduces future maintenance costs and can only be provided when all parts of the concrete slab or concrete base course develop the same unit stress produced from a constant applied wheel load. Cracks from various causes are liable to form in pavements in spite of predetermined expansion and contraction joints. American Steel & Wire Company Welded Wire Fabric ties these un-predetermined cracks together and maintains a balanced design by assuring genuine load transference across the cracks. Our booklet Reinforced Roads and Streets explains in detail why it is essential to properly balance the pavement design. Your copy will be forwarded upon request.

FURNISHED IN ROLLS OR SHEETS



Electric Weld **Triangle Mesh**

1831 MORE THAN 100 YEARS of PROGRESS in WIRE MAKING **1934**

AMERICAN STEEL & WIRE COMPANY

208 South La Salle Street, Chicago
94 Grove Street, Worcester

SUBSIDIARY OF UNITED STATES STEEL CORPORATION
AND ALL PRINCIPAL CITIES

Empire State Building, New York
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Export Distributors: United States Steel Products Company, New York

Highway Construction, Maintenance

Road Funds Make Legitimate Contribution to County Poor Fund

THE Poor Fund of Faribault County, Minn., was saved at least $5,000 in 1932 as a result of state-Federal highway work which provided jobs for many unemployed, according to a report of Deputy County Auditor H. G. Siverson to the State Industrial Commission. Mr. Siverson states: "We sincerely hope that the present Legislature will appreciate the desirability of having funds available in order that the various counties may participate in the state highway work in 1933, as we did last year. With the unemployment situation as it was in the fall of 1932, it was impossible for a large number of Faribault County laboring men to get work of any kind, a condition new to this county and due to the extremely low prices of farm products and the consequent inability of the farmers in this county to employ the much-needed help as usual.

"We firmly believe that, had it not been for the work provided through your commission (The State Industrial Commission), our county would have been forced to give aid to a large percentage of men employed on state highway projects in this county as early as October of last year; that by reason of work allotted men in this vicinity there was created a saving to the County Poor Fund of at least the sum of $5,000; and in addition to the savings in dollars the morale and self-respect of the individual worker was preserved."

No Pot-Holes in England

ACCORDING to Donald C. Stone, of the International City Managers' Association, in his interesting book, "Some Observations on Municipal Practices in European Cities," pot-holes are unknown in England. He says, "We traveled approximately 4,000 miles on British roads, and not once in any of the major hard-surfaced roads did we see a large break or unrepaired hole. Rather, we found everywhere fine surfaced roads in excellent repair. Some of them are narrow, in fact, very narrow, but always good. This applies to secondary and even rural lanes. Not only did the excellent caliber of existing roads impress us, but also the fact that low-cost practices were so prevalent. Everywhere surface treatment was under way, and in reconstruction work every effort is made to salvage as much of the existing roadbed as possible.

"The roadways of England are divided into Class I, Class II, and Other Roads. This classification is employed by the Ministry of Transport in developing a comprehensive road system and as a basis for grants for road construction and maintenance. Major steps have been taken within recent months to reduce the number of road maintenance authorities. To this end the counties have been made the area for road maintenance work with the provision that in case of municipalities above a certain size this authority may be delegated to the municipality. In brief, however, under the general supervision of the Ministry of Transport, a country-wide and unified system of roads and road practices is developing in England with a minimum loss of efficiency and quality of work due to the concentration of road powers in a few local authorities. There has been a deliberate attempt to make the users of the roads pay entirely for their construction and upkeep, and the Government has about attained this end. License taxes are most severe. The annual tax on a 7-horsepower (English rating) car was at the rate of $48 a year. The amount varies with the horsepower, which explains the large proportion of motors in the 6- to 12-horsepower class. The annual tax on what we call a medium or light automobile amounts to $100 or more. Petrol taxes are likewise higher, but less proportionately to price than in the United States.

"Prior to the war the road maintenance was performed to a large extent by contract. The road engineer, frequently called the surveyor, would prepare his estimates of maintenance needs and then let the work out by contract. The contract system eventually broke down, and direct labor by counties and cities took its place. No authority in England at the present time uses the contract system for maintenance work. The last county in Scotland to discontinue the contract system was Ayrshire, and that was several years ago. The reconstruction of roads is generally treated as a maintenance problem and is usually performed by direct labor."

The Evolution of Highway Development and Financing

IN the early period extending to the middle of the 19th century the Federal Government assumed the initiative in furnishing major highway routes, but it gradually relinquished the responsibility to the separate states, which in time placed highway development on a commercial basis by granting charters for the operation of toll roads. During the second phase in the evolution of highway transport, "the calamity of the railway" fell on toll operations, and states transferred their official favors to railroad development, so that highway transportation declined to a position of minor importance. So between the middle and the end of the 19th century only a small portion of highway travel passed beyond county boundaries.

At the turn of the century transportation of goods and persons over public highways entered the present stage of development. The coming of the automobile increased the operating radius of highway travel, and it was realized that the cost of highway facilities required by these different types of traffic could not with equity be assessed against local property owners, but that a portion of the cost should be assessed against general state funds collected from the state taxpayers at large. From this there emerged the conception of general-use highways and land-utilization highways. With widely diffused vehicle ownership, pressure was brought upon governmental agencies to expand and improve highway systems.

By the end of 1931 there were 3,034,893 miles of rural roads in the United States, of which 328,942 miles were in state highway systems, and 2,705,951 were local, county and township roads. About 74 per cent of the state highway mileage was surfaced, and over 33 per cent of this was of a high type. In the local systems only 21 per cent had been surfaced and not more than 5 per cent was high type.

In the course of ten years the methods of financing highway development have changed. Highway income is derived from three sources—state and local general funds, special motor-vehicle tax levies and Federal Aid allotments. In 1921, revenues derived from general tax sources amounted to 25.3 per cent of all state highway income and user taxes, made up of gasoline tax revenues, and motor-vehicle license fees constituted only 26 per cent of the state highway income.

By 1930 general tax funds were no longer being called upon for any substantial contribution to state highway development. General taxation accounted for only 9 per cent, and moreover revenues from user taxes were pledged to cover interest and amortization on all state borrowing for general purposes, thereby relieving general property from all obligations on that score. Federal contributions had dropped from 19 to 8 per cent. User tax revenues accounted directly for 61.7 per cent of all state highway income in 1930, and an additional 19.6 per cent was obtained from borrowings supported wholly by user taxes. Thus in 1930 motor-vehicle owners as a special class were responsible for 81 per cent of the income made available from all sources for state highway purposes. By 1930, also the user taxes produced about 20 per cent of all local highway funds.

—From a special bulletin of the National Highway Users Conference, Washington, D. C.

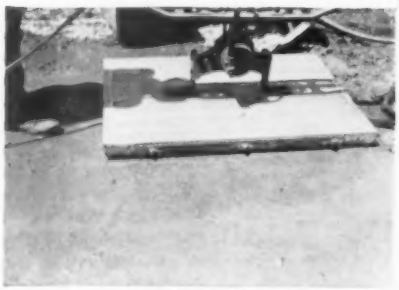
Public Improvement Guarantees

"Laws and Court Opinions Covering Public Improvement Guarantees" is a review by Monroe L. Patzig, of the Patzig Testing Laboratories, Des Moines, Iowa, reprinted in a 20-page pamphlet from the October, 1933, *Bulletin* of the Associated State Engineering Societies. The Iowa law on this subject is reviewed and the author's determination of what a reasonable interpretation of the statute should be is given. (Apply to the author.)

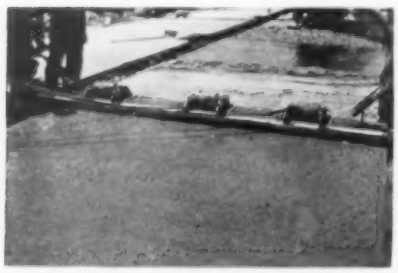
ELMHURST TEST ROAD

General View—Cement Bound Macadam Test Road at Elmhurst, Ill. Finished sections at left background. Coarse aggregate in foreground being given initial rolling with 3-ton tandem roller.

For Light Traffic both Roads and Streets and widening jobs—use Cement Bound Macadam built with CWA Labor!



Vibratory platform used for compacting some of the sections.



Vibratory screed used for compacting certain sections

PRODUCES THE ANSWER . . . CEMENT BOUND MACADAM

81 sections of Cement Bound Macadam Pavement were built, providing the opportunity to study the action and results of 81 combinations of material and methods, under completely controlled conditions—years of experience gained in a single season.

AGGREGATES USED:

CRUSHED LIMESTONE
GRADED GRAVEL
AIR-COOLED, BLAST FURNACE SLAG
COARSE, MEDIUM AND FINE SANDS.

METHODS OF COMPACTING:

HAND TAMPING
TANDEM ROLLERS, LIGHT AND MEDIUM
VIBRATORY SCREEDS
VIBRATORY PLATFORMS

Test beam removed for determination of flexural strength. The rough surface is the bottom, or sub-grade side of the pavement slab.

Sub-grade treatment was studied. Methods of applying grout and the effect of varying consistencies of grout were thoroughly tested.

Results were checked by removing full size beams from the slabs and testing them in flexure: cores were taken for compressive strength tests.

The results were most convincing—you see some of them here—they will be available soon in booklet form. Write for your copy now.

Meantime here is another low cost way of building a rigid, permanent pavement.

"Flow cone" developed for measuring the fluidity of grout. *"Flow cone" in use in the field.*

The edge of a ten-inch slab; uncrushed gravel aggregate, fully penetrated by grout.

Cores removed for determination of compressive strength, from one of the sections built with crushed limestone aggregate. Note complete penetration of grout.

PORTLAND CEMENT ASSOCIATION

Room 231—33 West Grand Avenue, Chicago, Illinois

Sewerage and Sewage Disposal

Stabilizing of Sewage Screenings

FOR some time sanitarians have given considerable attention to the treatment and ultimate disposal of sewage screenings. Although screenings hold a rather minor position in relation to the total weight of solids collected and treated at a sewage treatment plant, their disposal demands considerable attention. Screenings are normally composed of sewage-soaked paper, rags, garbage, sticks, matches, vegetable matter, etc., mixed with fecal matter and sewage "grease." Industrial wastes may add other types of materials. The character of the screenings also depends on whether the sewers are of the separate or the combined type, on the character of the population or industries served, and on the season of the year. The size of openings of the bar racks or screens and the method and frequency of cleaning also affect the character and quantity of screenings recovered. Bar screens remove an average of 2 cubic feet (100 pounds) of screenings of about 85 per cent moisture, or 15 pounds of dry material per million gallons. Fine screens, depending on the type and size of openings, remove from 5 to 40 cubic feet of screenings, or about 50 to 400 pounds dry weight of materials per million gallons. Although these weights may seem immaterial, simple calculations will show that in moderately large plants of 20 million gallons daily capacity, there are collected from 50 to 700 tons, dry weight, of screenings per year. These screenings may be infected with pathogenic bacteria, and they contain sufficient putrescible material so that they soon become very foul and offensive, unless they are dried, treated with lime or other chemicals to arrest putrefaction, or disposed of in some manner.

The common practice at most plants is to bury the screenings or use them for fill. In a very few places they are used for fertilizing purposes. In regard to cost, some plants report disposal as cheap as 50 cents per ton, while others find the expense runs as high as $9.30 per ton.

A digester for fibrous materials developed at the University of Illinois, and now known as the P F T digester, consists of a tank of rectangular shape and provided with a transversely extended vertical baffle, spaced from one end to divide the tank into two compartments—a relatively large digestion compartment and a small residue compartment.

A cylindrical drum is mounted horizontally within the digestion compartment upon a shaft journaled in bearings carried by the wall dividing the two compartments and the end wall of the tank. The drum is adapted to be rotated continuously or intermittently at any suitable speed. The frame of the drum is covered with a cylinder of reticular material, such as wire screenings or perforated metal. Each end of the drum is provided with a seal ring which is adjusted so as to prevent the escape of material from within the drum into the outer portion of the fermentation compartment.

The feeding end of the tank is provided with a spout extending through an opening in the tank end wall within the circle formed by the seal ring. The material to be treated may thus be fed directly into the open end of the drum adjacent to the feeding spout. A discharge opening is provided in the lower portion of the baffle wall to permit stabilized material from the drum to pass out into the discharge compartment. The material discharged into the compartment is withdrawn in any suitable and convenient manner.

The fermentation compartment is fitted with a gas-tight cover provided with a gas vent having a tight cover, or a removable hood resting in a water seal. The water seal prevents the entrance of air into the digestion compartment where the fermentation takes place, and also prevents the escape of gas. A pipe from the collecting hood serves to draw out the gas into a suitable reservoir or any device in which the gas may be used or stored. The drum is rotated or inverted at least twice a day, or continuously if desired. This releases the entrapped gases, and the tank contents are sufficiently mixed to prevent local accumulation of acids. It has been found that turning the drum over and the periodic feeding at the front end of the tank is sufficient to cause the fermented material to work itself out through the opening in the baffle into the residue end of the tank. Here it continues to ferment slowly, and again gas bubbles are entrapped and the material is brought to the surface, where it can be removed with a hay or manure fork, or by a continuous device if desired. The design and operation of this drum type digester have been patented.

Sewage screenings were fed at the rate of 1,530 to 2,100 pounds wet weight, or 163 to 239 pounds dry weight, per day per 1,000 cubic feet of digestion capacity. These have been stabilized with the production of an average of 5.45 cubic feet of gas of 59 per cent CH_4 per pound dry weight of the screenings added. This amounts to an average gas production of 1.09 volumes of gas per tank volume per day.

From a practical point of view this means that the coarse-bar sewage screenings from a city of 50,000 equal to 5 cubic feet or 38 pounds dry weight or a little more per day could be stabilized in a tank 4 feet wide by 4 feet 8 inches tall by 10 feet long, a total volume of 187 cubic feet. Such treatment would involve a low first cost and a low operating expense. From such treatment an average of 207 cubic feet of gas would be produced per day. If automatic screens were used or other sources of power were near by, connections could be made so that the digester could be fed automatically, the drum rotated continuously or intermittently, and the residue removed.

—From a paper published by C. S. Boruff and A. M. Buswell, State Water Survey, Urbana, Ill., in *Sewage Works Journal*.

Variations in Sewage Characteristics

IT is well known that the character of sewage varies almost from minute to minute. There are well-recognized daily, weekly and seasonal cycles more or less regular, and affecting both the volume of sewage and its organic concentration. The daily and weekly cycles are more noticeable in purely residential communities. As industrial wastes increase, the cycles are flattened out except as the seasonal demand for certain goods, or the necessity for packing certain crops at special times, becomes a factor.

Even temporary changes in the volume or character of sewage may be of importance to the satisfactory operation of a sewage treatment works, especially if that change is on account of wastes inimical to the biology of the process, but, ordinarily, only such changes as persist for a considerable length of time are of interest to the operator.

The capacity of the sewage treatment plant is stated in terms of million gallons daily, with no respect for the daily peak which occurs regularly, and in volume, concentration and duration is sufficient to affect the extent of treatment given to a considerable volume of sewage. In the paper, "The Hourly Variation of Indianapolis Sewage," by C. K. Calvert, Superintendent, Indianapolis sewage treatment plant, published in the *Sewage Works Journal*, the following summary appears which best characterizes the problem of hourly variations of sewage flow and character:

1. There is a wide variation in the concentration of day and night sewage.
2. To insure continuous satisfactory operation of sewage treatment plants, capacities should be such that the strongest daily sewage will receive adequate treatment — disregarding "average" figures.
3. Variation in the sewage effluent during the daily peak is more distinct at the end of the week than at its beginning, owing to sludge exhaustion.
4. Sewage characteristics may be utilized to determine relative quantities of different flows.
5. When the dilution is not too great, the sewage peaks may be followed downstream and the time of flow determined from point to point.

See "The Disposal of Sewage Sludge by Incineration," pages 39 and 40, in The American City for December.

NEWS *For Every Public Official*

An Automatic Electric Fire Alarm Unit for Public Buildings

Gamewell VITALARM Signal

Actual Size

Now, every municipal building can have reliable automatic fire alarm protection in convenient form.

This new automatic fire alarm unit known as the Gamewell VITALARM Signal, can be plugged into any standard light socket. It has *two* detectors and a loud alarm howler in the one unit. It operates on the two best known principles of automatic fire alarm, having both the "rate of rise" and "fixed" thermostats. Catches the fire quickly and surely—frankly, it is an amazing device for discovering fire and arousing the occupants of any building.

The life hazard in public schools, hospitals, institutions and auditoriums can be greatly reduced through the installation of the VITALARM Signal. Other public property and records can be protected also by equipping city halls, libraries, garages, water works, fire and police stations, etc.

Every municipal official should become acquainted with the VITALARM Signal—a product of the world's leading fire alarm manufacturer. We'll be glad to mail you complete descriptive literature.

THE GAMEWELL COMPANY
Newton, Massachusetts

Typical Installations

Progress in Fire and Traffic Safety

Merit Awards in Fire Prevention Week Campaign

THE International Committee of Judges appointed to review the reports submitted to T. Alfred Fleming, Supervisor of the Conservation Department of the National Board of Fire Underwriters and Chairman of the Fire Prevention Week Committee of the National Fire Protection Association, by hundreds of towns and cities in the United States and Canada, outlining their activities during Fire Prevention Week, October 8-14, has issued its report.

The Committee was composed of the following:

W. E. Mallalieu, General Manager, National Board of Fire Underwriters
Franklin H. Wentworth, Managing Director, National Fire Protection Association
Ross B. Davis, Chief Engineer, Bureau of Fire of Philadelphia, and Past-President, International Association of Fire Chiefs
George F. Lewis, Deputy Fire Marshal of Ontario, Chairman, Committee for the Canadian Provinces

There was a large increase in the number of cities reporting and a great improvement in the effectiveness of the campaign conducted.

Of the cities reporting in the United States, 76 suffered no loss by fire during the week of October 1-7, 92 escaped damage from burning during Fire Prevention Week, October 8-14, and 81 reported no fire loss throughout the following week. This is a total of 249 fireless weeks covered by the period of this special fire prevention observance. Eighty-one cities showed a weekly loss of less than $25. The fire loss in the cities submitting such records, as compared with the average weekly loss of the same cities for the previous year, showed a reduction of 67 per cent.

A minimum grade was fixed by the Committee for attainment of first and second position in the Record of Merit. Where this grade was not reached by cities, but good work was accomplished, the leading cities in each state received honorable mention.

The merit awards for the United States follow (first and second awards being indicated by 1 and 2, and honorable mention by HM):

Arizona
- Prescott—1
- Phoenix—2

Arkansas
- Pine Bluff—1

California
- Berkeley—1*
- San Francisco—1*
- Pasadena—2
- Fresno—HM

Colorado
- Fort Collins—1
- Denver—2
- Pueblo—HM

Connecticut
- Hartford—1
- New Haven—2
- Bristol—HM

Delaware
- Wilmington—1

Florida
- Ocala—1
- Tampa—2
- Lake Worth—HM

Georgia
- Savannah—1
- Atlanta—2

Idaho
- Pocatello—1
- Boise—2

Illinois
- Joliet—1
- Champaign—2
- Western Springs—HM

Indiana
- Indianapolis—1
- Fort Wayne—2
- Hammond—HM

Iowa
- Burlington—1
- Cedar Rapids—2
- Des Moines—HM

Kansas
- Wichita—1
- Kansas City—2
- Dodge City—HM

Kentucky
- Owensboro—1
- Newport—2

Louisiana
- Lafayette—1
- Baton Rouge—2

Maine
- Portland—1

Maryland
- Annapolis—1
- Hagerstown—2
- Salisbury—HM

Massachusetts
- Fitchburg—1*
- Lynn—1*
- Springfield—2
- Malden—HM

Michigan
- Fremont—1
- Detroit—2*
- Traverse City—2*
- Grand Rapids—HM

Minnesota
- St. Paul—1
- Duluth—2
- Faribault—HM

Mississippi
- West Point—1
- Jackson—2

Missouri
- St. Louis—1
- Kansas City—2
- Chillicothe—HM

Montana
- Billings—1
- Bozeman—2
- Great Falls—HM

Nebraska
- Lincoln—1
- Omaha—2
- Hastings—HM

New Hampshire
- Concord—1
- Manchester—2
- Keene—HM

New Jersey
- Jersey City—1*
- Ridgewood—1*
- Newark—2
- West New York—HM

New Mexico
- Roswell—1
- Raton—2

New York
- Poughkeepsie—1
- Utica—2
- Rochester—HM
- Watertown—HM

North Carolina
- Asheville—1
- Greensboro—2
- Rocky Mount—HM

North Dakota
- Valley City—1
- New Rockford—2
- Devils Lake—HM

Ohio
- Cincinnati—1
- Elyria—2*
- Lakewood—2*
- Toledo—HM
- Youngstown—HM

Oklahoma
- Stillwater—1
- Blackwell—2
- Muskogee—HM

Oregon
- Baker—1

Pennsylvania
- Harrisburg—1*
- Philadelphia—1*
- Coatesville—2
- Pottstown—HM

Rhode Island
- Pawtucket—1

South Carolina
- Columbia—1
- Charleston—2

South Dakota
- Rapid City—1

Tennessee
- Memphis—1
- Johnson City—2
- Nashville—HM

Texas
- Amarillo—1
- El Paso—2
- Houston—HM
- Laredo—HM

Utah
- Provo—1

Vermont
- Springfield—1

Virginia
- Richmond—1
- Roanoke—2
- Norfolk—HM

Washington
- Colfax—1
- Tacoma—2
- Bellingham—HM

West Virginia
- Parkersburg—1

Wisconsin
- Oshkosh—1
- Milwaukee—2
- Madison—HM

Wyoming
- Casper—1

Hawaii
- Hilo—1

* Tied.

The following cities have a grade of merit of 90 per cent and over:

Wichita, Kans.
Prescott, Ariz.
St. Louis, Mo.
Berkeley, Calif.
San Francisco, Calif.
Fort Collins, Colo.
Ocala, Fla.
Savannah, Ga.
Cincinnati, Ohio
Colfax, Wash.
Asheville, N. C.

Cities having a grade of 80 to 89 per cent:

Jersey City, N. J.
Ridgewood, N. J.
Lakewood, Ohio
Elyria, Ohio
Burlington, Iowa
Newark, N. J.
Indianapolis, Ind.
St. Paul, Minn.
Kansas City, Mo.
Portland, Maine
Valley City, N. Dak.
Tacoma, Wash.
Oshkosh, Wis.
Hartford, Conn.
Ft. Wayne, Ind.
Owensboro, Ky.
Lafayette, La.
Duluth, Minn.
Columbia, S. C.
Bellingham, Wash.
Kansas City, Kans.
Newport, Ky.
Fitchburg, Mass.
Lynn, Mass.
Springfield, Mass.
Fremont, Mich.
New Rockford, N. Dak.
Amarillo, Texas
Hilo, Hawaii
Fresno, Calif.
Pasadena, Calif.

New England Safety Conference Planned

THE Massachusetts Safety Council, which for many years has sponsored an annual state safety conference, announces that a New England Safety Conference will replace it in 1934. The sessions will be held at the Hotel Statler, Boston, April 30 and May 1, with an estimated attendance of 2,000.

A large number of organizations will cooperate, headed by the New England Council. There will be 15 sessions, covering industrial accident hazards, highway safety and fire prevention. Two Governors and 20 Mayors will attend one of the luncheon meetings on the second day.

The convention committee headquarters will be at 6 Beacon Street, Boston, with Lewis E. MacBrayne, General Manager of the Massachusetts Safety Council, as Secretary.

*The Automobile Compensation Plan**

IN the volume by this title, Patterson H. French offers a solution for some problems of court congestion and accident litigation as existing in the administration of justice in New York State. It is shown that automobile cases contribute greatly to the causes of slow-moving judicial action, and that the attendant evils in the handling of such cases demand a new method of management.

There is a movement "to separate automobile cases from other classes of litigation and to treat them in a special manner, in special tribunals and under new rules which are designed to overcome the difficulties which now exist.

"The compensation scheme involves three principles from which all of its more detailed provisions flow:

"1. The removal of all automobile personal injury cases from the courts and the handling of these by an administrative commission with relatively swift and simple procedure, similar to that which now operates in connection with workmen's compensation.

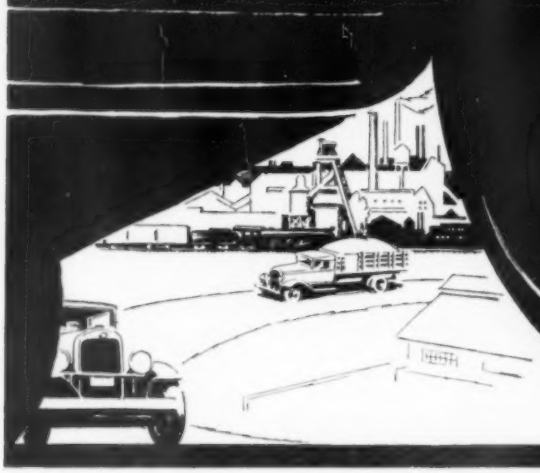
"2. The abandonment of common law rules of damages, negligence and contributory negligence. The plan places absolute liability upon owners of motor vehicles for all injuries in which their vehicles were involved. Damages are limited definitely and will be measured as accurately as possible according to medical expenses and actual economic loss suffered.

"3. The inauguration of a system of compulsory financial responsibility among automobile owners by requiring them to carry insurance or furnish security or a bond covering all awards which may be made against them."

These principles are analyzed as to their reasonableness and results. The entire discussion is without partisan bias, and with full acknowledgment of the difficulties and uncertainties involved.

* See page 77, Dec., 1933, THE AMERICAN CITY.

Fitted Exactly to YOUR Requirements *No Matter What They Are!*



GMC HEAVY DUTY TRUCKS

The GMC heavy duty line can provide *any* type of equipment—*exactly fitted to your particular needs.* No other line of commercial vehicles is so extensive or complete.

Eleven basic models cover the 5 to 15 ton range. GMC trailer equipment gives capacities to 22 tons. Six heavy duty engines are *regularly* available—uniform-design, 6-cylinder, valve-in-head, all of them! Forty-four distinct chassis . . . 14 rear axles . . . 7 transmissions—are *standard, available* selections for heavy duty use!

And, mark you—every GMC heavy duty truck is a regular production job! *From bumper to tail lamp—every one is truck-built by GMC!*

This is the industry's most comprehensive line of heavy duty trucks and trailers. It is matched, and rounded to completion, by a truck-built line of light and medium duty vehicles from 1½ to 4½ tons capacity.

Fitting commercial equipment *to your particular needs* can be done, with *scientific exactitude,* only with GMCs! The GMC representative is equipped to determine precisely the heavy duty truck that will do your job best . . . and most economically. Write or wire for further details—*today.*

GENERAL MOTORS TRUCKS and Trailers

GENERAL MOTORS TRUCK COMPANY — *Time Payments Available Through Our Own Y. M. A. C.* — PONTIAC, MICHIGAN

THE AMERICAN CITY should always be mentioned when writing for this material which is furnished free.

Are You Keeping UP-TO-DATE? These Catalogs will Help

Keep your files up to date by checking over these items each month and writing for those you need.

A NEW AND BETTER BINDER FOR MACADAM ROADS

649. Temperature-Resisting Cement, so-called because of its remarkable ability to resist stresses caused by temperature changes, is one of the new materials in road construction. For further information on this profitable bituminized-cement type of macadam road, write to the TRC Corp., 1002 Engineers Bldg., Cleveland, Ohio, asking for the three booklets, "European Practice," "American Experiments," and "Field Experience in Massachusetts."

HYPO-CHLORINATION OF WATER

650. A 72-page booklet of water-works practice has been issued by the Mathieson Alkali Works, Inc., 250 Park Ave., New York, summarizing a wide range of problems with specific advice for their solution, and with particular emphasis placed on the widened range of usefulness for the modern dry chlorine carrier H T H as a source of hypochlorite solutions. This booklet may be secured free by water-works men upon application to Mathieson.

ACTIVATED CARBON

651. Cliffchar, an activated carbon which is produced in three grades to cover all the requirements of water treatment, and which is strictly uniform, since it is produced under a rigid chemical control, is described in a bulletin which may be secured from The Cleveland-Cliffs Iron Co., 1460 Union Trust Bldg., Cleveland, Ohio.

SANITARY SEWER CATCH-BASIN CASTINGS

652. All-cast-iron sanitary sewer catch-basins do away with the disadvantages of brick or concrete basins because of the indestructible nature of the material, and because the same men who make the excavation can install the basins and there is less excavating than for other types of basins. Complete information may be secured from the Sanitary Sewer Basin Co., 549 W. Washington Blvd., Chicago, Ill.

ASPHALT HEATERS AND TOOLS FOR STREET REPAIRS

653. The Hauck Mfg. Co., 112 Tenth St., Brooklyn, N. Y., has issued a series of illustrated bulletins describing in detail Hauck asphalt surface heaters, asphalt tar and pitch kettles, asphalt emulsion sprayers, patrol kettles, tool heaters, torches, weed burners, etc., of particular interest to municipal officials in charge of the all-important duty of street maintenance.

PLAYGROUND EQUIPMENT

654. Safe playground equipment, including swings, climbing towers, and swimming pool equipment, is described in the playground and swimming pool catalog of the American Playground Device Co., Anderson, Ind.

COMPLETE WATER PURIFICATION PLANTS

655. Water purification plant equipment, swimming pool filters, dry chemical feeders, water softeners, free carbonating apparatus, activated carbon plants and other water purification equipment, are described in the catalog of E. W. Bacharach & Co., Rialto Bldg., Kansas City, Mo.

TRAILERS EFFECT SAVINGS IN REFUSE COLLECTION

656. The Highway Trailer Co., Edgerton, Wis., has published a 4-page illustrated folder reproducing photographs of the Highway trailers in service at Peoria, Ill., and giving cost data showing the savings effected through the use of these trailers in handling municipal refuse.

RESURFACING STREETS AND HIGHWAYS IN WINTER

657. Tarvia-lithic construction, which may be begun in the late fall and carried on through the winter with inexperienced labor drawn from the ranks of the unemployed, and which will result in a satisfactory, easy-riding, skid-proof, all-weather pavement, is described in literature which can be secured from The Barrett Co., 40 Rector St., New York.

REVERSIBLE BLADE SNOW-PLOWS

658. Monarch reversible blade snow-plows, universally adaptable to any standard make of motor truck, and equipped with manual or hydraulic lifting devices and made electrically welded throughout, are described in the bulletin of the Monarch Mfg. Co., Inc., Wilmington, Del.

PORTABLE ASPHALT MAINTENANCE PLANTS

659. A portable asphalt maintenance plant with a capacity of 400 yards per day, which possesses complete control of materials, insuring an accurate mixture to comply with any standard specifications, is described in Bulletin R-400 which may be secured from Hetherington & Berner, Inc., Indianapolis, Ind.

TRAFFIC-ACTUATED TRAFFIC CONTROL SYSTEMS

660. The Automatic Signal Corp., 230 Park Ave., New York, will be pleased to send complete information on the Electro-Matic traffic-actuated traffic control system, which dispatches traffic more rapidly than is possible with predetermined time intervals and does away with the need of a police officer to control the signal manually.

DIESEL ENGINES FOR MUNICIPAL POWER PLANTS

661. Busch-Sulzer Bros.-Diesel Engine Co., St. Louis, Mo., original and oldest diesel builder in the United States, with 33 years' experience in building diesels, will be pleased to furnish complete information on diesel power for municipal water and electric plants to any cities which are considering the economy of furnishing power for their own utilities.

WROUGHT IRON FENCES AND RAILINGS

662. The catalog of the Cincinnati Iron Fence Co., Inc., 3305 Spring Grove Ave., Cincinnati, Ohio, describes and illustrates this company's complete line of wrought iron fences, gates, stair and balcony railing, grilles, etc., for public buildings and grounds, schools, parks, playgrounds, cemeteries and private estates.

USES OF VITRIFIED SALT-GLAZED CLAY SEWER PIPE

663. The Clay Products Assn., 111 W. Washington St., Chicago, Ill., will be pleased to furnish complete information regarding the features of vitrified salt-glazed clay sewer pipe for sewers, drainage, culverts and conduits, as well as the use of vitrified salt-glazed underdrains, liner plates and segmental sewer blocks, wall coping and flue lining.

BOILERS, ELEVATED TANKS AND STEEL PLATE WORK

664. The R. D. Cole Mfg. Co., Newnan, Ga., which has had 77 years' experience in the manufacture of boilers, elevated tanks and steel plate work, will be pleased to send complete information to cities on Cole tanks for the elevated storage of water to maintain a balance and uniform pressure in municipal water supplies.

PERMANENT IMPROVEMENTS FOR SCHOOLS, PARKS AND PLAYGROUNDS

665. The Portland Cement Assn., Room 231, 33 W. Grand Ave., Chicago, Ill., in its booklet P-11, a 20-page illustrated brochure, illustrates and discusses various improvements which may be made in homes, schools, parks, playgrounds, and around industrial plants, which will be particularly beneficial at the present time in the employment of local labor. Copies of this book may be secured free on request.

Return this coupon to receive catalogs wanted.

1-34

The American City
470 Fourth Ave., New York

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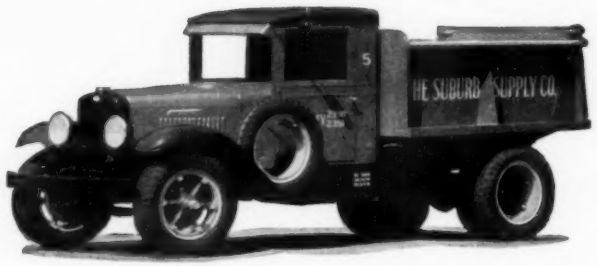
Close-Figuring Truck Buyers ...See the International 1½-ton B-3

WHAT a remarkable value, this International Model B-3. Advanced International engineering in every inch of design, true International quality in every ounce of construction — that's what you get in this 1½-ton, 6-cylinder chassis at only $695.

Take advantage of this low price. Make it a point to see the B-3 at the nearest Company-owned branch, or International Truck dealer's showroom. Ask for a demonstration of this or any other International. The complete line includes models ranging in capacity from ½-ton to 7½-ton.



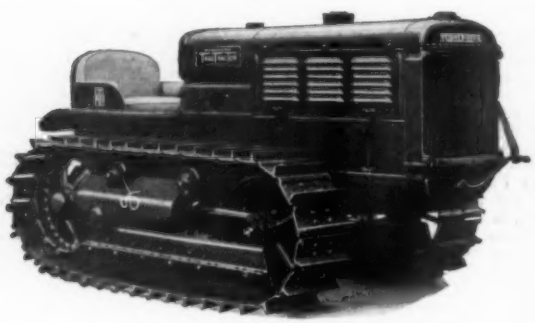
The Model B-3 is reduced to

$695

for the 136-in. wheelbase chassis, f. o. b. factory

Dual rear wheels extra

Model B-3 Features: Removable cylinders, exhaust-valve seat inserts, full pressure lubrication, down-draft carburetion, fuel pump, thermostatically controlled cooling, full-floating rear axle, counter-balanced 4-bearing crankshaft, and semi-elliptic auxiliary rear springs. Wheelbases 136 and 160-in.



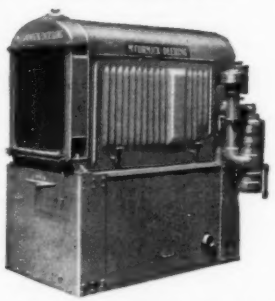
McCORMICK-DEERING TRACTRACTOR

The McCormick-Deering T-40 TracTracTor, shown above, is a big 6-cylinder, 5-speed unit capable of operating heavy tools in the hardest kind of work. The T-40 is also available with a Diesel engine. For lighter work, there is the Model T-20 TracTracTor.

McCormick-Deering TracTracTors are the the most accessible crawler-type tractors built. Steering clutches and steering brakes can be inspected, adjusted, or replaced through rear cover plates without disturbing tracks, track frames, or driving sprockets. Other parts are equally accessible, making for surprisingly low maintenance cost.

McCORMICK-DEERING INDUSTRIAL POWER

More than a quarter-century ago, International Harvester began to pioneer the tractor power idea. Today the McCormick-Deering line of tractors for industrial work includes six models designed to meet every need for mobile industrial power, working either alone or as the power for a wide range of special equipment. In addition, there are power units to meet demands for stationary power and special installations.



Above: McCormick-Deering Power Units are available in four sizes, including a Diesel power unit. They supply low-cost, dependable power for many kinds of stationary work.

At Left: McCormick-Deering Industrial Tractor, built in three sizes. These wheel-type tractors have been the standard of mobile industrial power for years. They have a great capacity for work. Available with pneumatic tires, solid rubber tires, or steel wheels with lugs.

NRA MEMBER U.S. WE DO OUR PART

INTERNATIONAL HARVESTER COMPANY

606 So. Michigan Ave. **of America** *(Incorporated)* **Chicago, Illinois**

INTERNATIONAL HARVESTER

ARE YOU KEEPING UP-TO-DATE? These Catalogs Will Help

REINFORCEMENT FOR ROAD CONSTRUCTION

666. In road construction a balanced design is essential. American Steel & Wire Co. welding wire fabric ties the un-predetermined cracks together and maintains a balanced design by assuring genuine load transference across the cracks. A booklet on reinforced roads and streets explains in detail why it is essential to properly balance the pavement design. A copy may be secured from the American Steel & Wire Co., 208 S. La Salle St., Chicago, Ill.

AIR DIFFUSER FOR ACTIVATED SLUDGE TYPE SEWAGE DISPOSAL PLANTS

667. Bulletin No. 2 on aeration and filtration issued by the Norton Co., Worcester, Mass., is devoted particularly to the care of porous plates and tubes in activated sludge sewage treatment plants which, because of the service in which they are used, present a problem in cleaning.

INSUFFICIENT STREET LIGHTING INCREASES NIGHT ACCIDENTS

668. According to a report on night accidents in Toronto, 41 per cent of the accidents result from insufficient lighting. A reprint of a pertinent article on this subject, "Darkness Brings Death," will be sent on request by General Electric Co., Dept. 6-201, Schenectady, N. Y.

A SOLUTION FEED CHEMICAL INJECTOR FOR WATER WORKS

669. An illustrated pamphlet which gives full details on the Wade automatic injector for applying copper sulphate, ammonium sulphate, ammonium nitrate and aluminum sulphate in correct proportions to water supplies can be obtained by writing to the Wade Automatic Chemical Injector Co., 2460 Coniston Pl., San Marino, Calif.

FINAL REPORT ON WATER TANK PAINT TESTS

670. The final report of the Ambridge paint tests, showing the manner in which 196 different kinds of paints and other coating materials protected the inside surface of the Ambridge steel water tanks, has been published by the Pittsburgh-Des Moines Steel Co., 3412 Neville Island, Pittsburgh, Pa., in Bulletin 3304. Copies of this bulletin may be secured by water-works officials interested in the proper protection of steel water tanks by application direct to the Pittsburgh-Des Moines Steel Co.

ASPHALT BLOCK CONSTRUCTION

671. Manual 4, Asphalt Block Construction, has recently been released by The Asphalt Institute, 801 Second Ave., New York, and contains 20 pages of text and illustrations on the construction of this modern type of city street paving. Copies may be secured free from The Asphalt Institute.

TIRE, BATTERIES, SPARK PLUGS AND BRAKE LINING

672. Road delays are costly. Avoid the unnecessary expense of premature tire failures, the risks of uneven, inefficient brakes, the delays due to worn defective spark plugs, lack of power in your battery, and the freezing of your radiator, by equipping your fleet of trucks with dependable Firestone accessories. Complete information may be secured from Firestone Tire & Rubber Co., Akron, Ohio.

COPPER MOLYBDENUM IRON AS A PIPE MATERIAL

673. Republic Steel Corp., Youngstown, Ohio, has published a 64-page illustrated booklet, 220-B, on Toncan iron pipe which it will be pleased to send to any water-works officials and power-plant officials interested in greater permanence for iron pipe services.

THE DEPENDABILITY OF FLOW METERS

674. Illustrated Catalog No. 700 issued by the Republic Flow Meters Co., 2240 Diversey Parkway, Chicago, Ill., briefly and concisely presents informative data of value to every one interested in flow measurements, whether of liquid or gases.

A TRANSPARENT CURE FOR CONCRETE

675. Complete information regarding Ritecure, which is a transparent material sprayed on the concrete to protect it against evaporation during the period of hydration, and which does not combine with the concrete surface or stain or change its physical appearance, has been developed by Johnson-March Corp., 29-28 Hunter Ave., Long Island City, N. Y. Complete information will be sent on request.

STAUNCH FENCES FOR EVERY PURPOSE

676. Stewart iron or chain link wire fences work 24 hours a day protecting and beautifying municipal properties. A copy of the new Stewart fence catalog, "The Ultimate in Protection," may be secured by writing to The Stewart Iron Works Co., Inc., 211 Stewart Block, Cincinnati, Ohio.

A NEW, BIGGER, STRONGER TRUCK

677. The new Chevrolet, bigger than ever, more striking in its appearance, with a stronger rear axle and greater power, higher top speed, new and more comfortable cabs, stronger transmission, and a new bigger front end, is described in literature which may be secured from the Chevrolet Motor Co., Detroit, Mich.

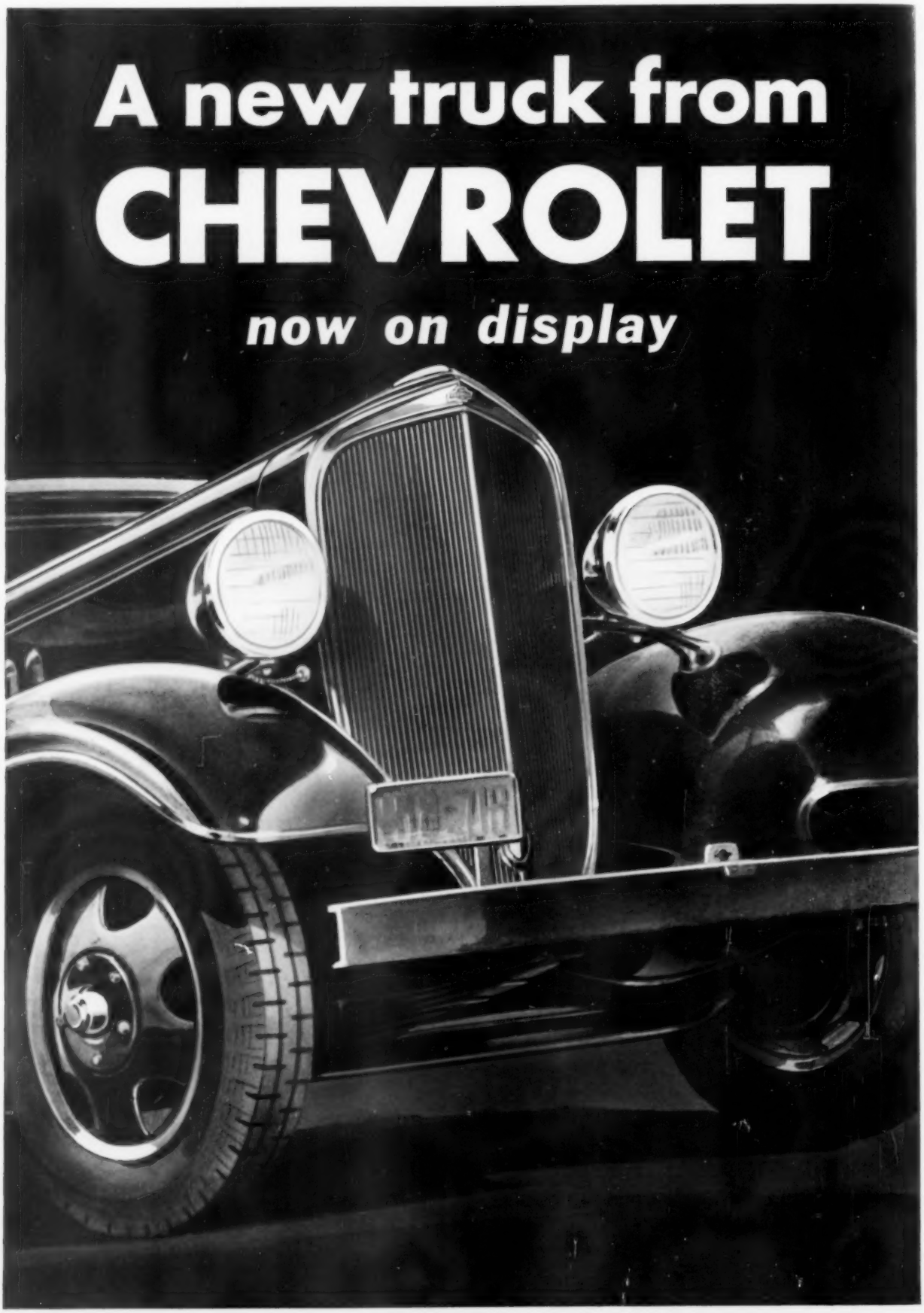
Racine's City Hall and Incinerator—Neighbors!

The 120-ton **Pittsburgh-Des Moines Incinerator,** built in 1929, for the City of Racine, Wisconsin, is seen in the foreground of the above photograph. In the background is the new City Hall —constructed two years later.

Evidence that Pittsburgh-Des Moines Incinerators afford **clean —sanitary—odorless** disposal of garbage and rubbish!

Pittsburgh-Des Moines Steel Company

3452 Neville Island, Pittsburgh, Pa.
953 Tuttle St., Des Moines — Room 941, 270 Broadway, New York
Chicago Dallas Seattle San Francisco


A new truck from
CHEVROLET
now on display

JANUARY, 1934

Vol. XLIX, No. 1

The American City

470 Fourth Avenue
New York

35 Cents, $2 a Year

Roadside Improvement Projects Actively Sponsored by United States Bureau of Public Roads

Typical Planting Demonstrations an Essential Part of the Vast Highway Construction Program

THE National Industrial Recovery Act has quickened public interest in the planned-development of our natural assets, of which the public highways are one of the greatest in their potentialities. The regulations governing expenditure of the $400,000,000 appropriation made specifically by Congress for highway construction give an important place among the major objectives of the expenditure to the appropriate improvement and landscaping of the highways. The rules and regulations approved by the Special Board for Public Works for carrying out the provisions of Section 204 of the Recovery Act recognize that much has been accomplished to restore the native roadside beauty in several states and communities under the direction of the state highway departments and the Bureau of Public Roads.

Usefulness and Beauty Should Go Together

The greater emphasis placed in the new program upon the improvement of the roadsides accords with the frequently expressed view of Thomas H. MacDonald, Chief of the Bureau of Public Roads, that the task of improving America's highways will not be completed until adequate attention has been given to the improvement of the roadsides as well as the roadways. Mr. MacDonald analyzes the problem as follows:

"Four major movements are needed to beautify and enhance the usefulness of the highways. They are:

"First, the complete elimination of commercial advertising signs, not only those within the rights-of-way, but those on private property along the rights-of-way;

"Second, the removal of oil filling stations, 'hot-dog' and lunch stands, and roadside markets that encroach upon the rights-of-way, and regulation of distance from rights-of-way at which such establishments may be located on private property;

"Third, the planting of trees and shrubs along the roadsides;

"Fourth, the location, design, and construction of the highways in such manner as to preserve the natural beauty of the countryside."

Section 6 of the Public Works Highway Regulations is interpreted by Mr. MacDonald as follows:

"It will be required that each state highway department include in its program of construction on the Federal-aid highway system a definite number of projects that will provide for the appropriate landscaping of a reasonably extensive mileage of parkways and roadsides. The work will be done preferably near the corporate limits of the larger cities, particularly where sufficient right-of-way is available to undertake projects of this character. It will include the selective cutting or pruning of existing growth, the removal of stumps, dead material, etc.; the obliteration of borrow-pits, traces of old roads, and other construction scars; the flattening of slopes and the rounding of slope intersections; the seeding or sodding of shoulders and slopes, and the planting of a sufficient amount of suitable material to accomplish a reasonably comprehensive roadside improvement. The planting of trees at regular intervals without regard to their environment, or the composition of adjacent plant growth, will not be considered as satisfactory.

"In order to carry out the work in a satisfactory manner, it is believed that it will be necessary for all state highway departments to employ qualified landscape architects and horticulturists to determine the proper kinds of plant material to be used in different soil and climatic conditions, and the most effective arrangement or grouping of the material, for each particular project location."

Future Development of Roadside Landscaping

Mr. MacDonald expects that roadside landscaping will become a regular department of the work of highway construction in the future, and he regards the provisions of the recovery measure as a first step in that direction. In the administration of the work provided for, it will be the purpose of the Bureau to bring about in all states a number of demonstrations of the possibility of pleasing roadside treatment at moderate cost, and to develop the

U.S. DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DIVISION OF DESIGN

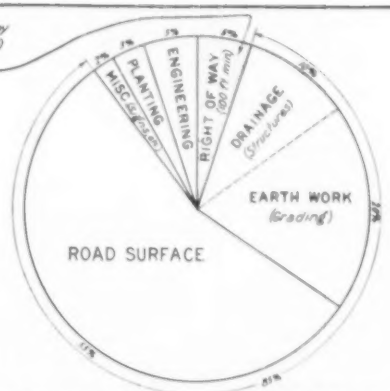
MODERN HIGHWAY DESIGN IS A PROBLEM OF BALANCING THE FUNDAMENTAL ELEMENTS OF CONSTRUCTION IN ECONOMIC RELATIONSHIP

THE FOUNDATION FOR ROADSIDE IMPROVEMENT IS AN ADEQUATE RIGHT OF WAY

THE POSSIBILITIES OF ROADSIDE IMPROVEMENT ARE ENHANCED AS WIDER RIGHTS OF WAY ARE OBTAINED IN RESPONCE TO THE DEMANDS FOR THE SAFETY, COMFORT, AND CONVENIENCE OF PRESENT AND FUTURE VOLUMES AND SPEEDS OF TRAFFIC

Note - R.O.W. = Right of way

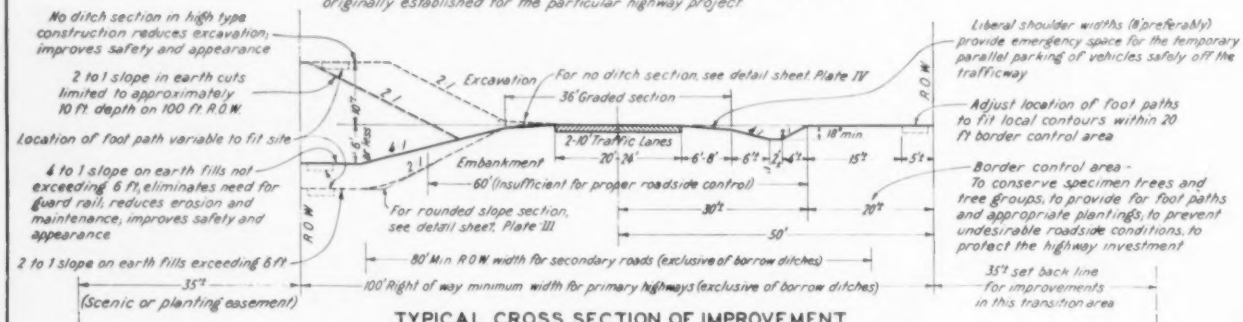
Approximate cost of sufficient and adequate right of way represents only a relatively small portion (one-twentieth) of the total highway investment



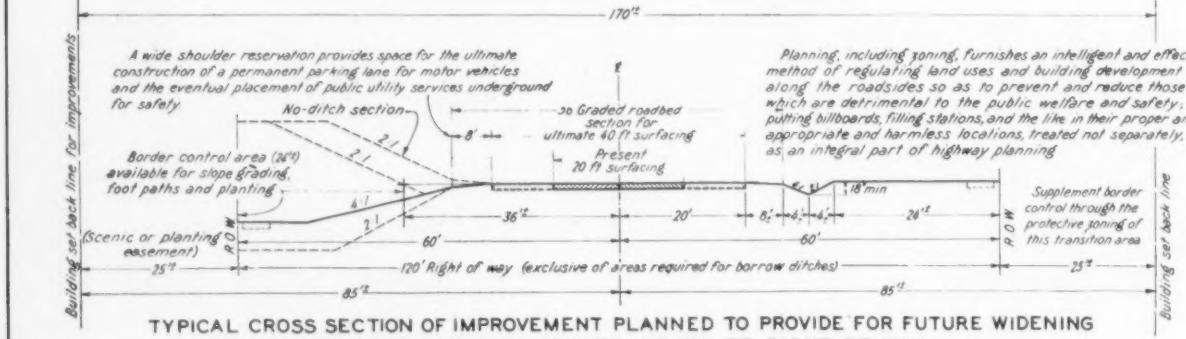
PERCENTAGE CHART SHOWING RELATIVE DISTRIBUTION OF COSTS FOR AVERAGE CONSTRUCTION ON PRIMARY HIGHWAYS

Note - Above chart does not include bridges or major structures of 20 ft or more span

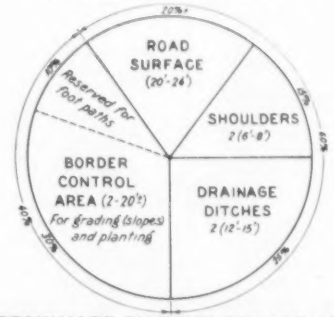
The adoption of standard highway sections of various types with minimum widths of right of way, necessary for adequate public control of the expansion of traffic and other allied services, permits proposed improvements to be economically planned so that all the work will fit in harmoniously with the ultimate development within the right of way limits originally established for the particular highway project


No ditch section in high type construction reduces excavation, improves safety and appearance
2 to 1 slope in earth cuts limited to approximately 10 ft. depth on 100 ft. R.O.W.
Location of foot path variable to fit site
4 to 1 slope on earth fills not exceeding 6 ft. eliminates need for guard rail; reduces erosion and maintenance, improves safety and appearance
2 to 1 slope on earth fills exceeding 6 ft.
Excavation
For no ditch section, see detail sheet Plate IV
36' Graded section
2-10' Traffic Lanes
20'-24'
Embankment
60' (Insufficient for proper roadside control)
For rounded slope section, see detail sheet, Plate III
30'
50'
70'
80' Min. R.O.W. width for secondary roads (exclusive of borrow ditches)
100' Right of way minimum width for primary highways (exclusive of borrow ditches)
35' (Scenic or planting easement)
Liberal shoulder widths (8' preferably) provide emergency space for the temporary parallel parking of vehicles safely off the trafficway
Adjust location of foot paths to fit local contours within 20 ft border control area
Border control area - To conserve specimen trees and tree groups, to provide for foot paths and appropriate plantings; to prevent undesirable roadside conditions, to protect the highway investment
35' set back line for improvements in this transition area

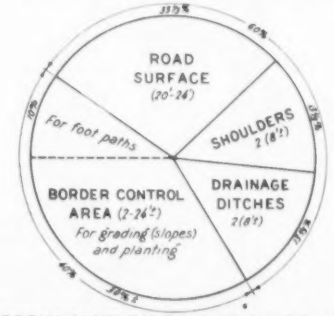
TYPICAL CROSS SECTION OF IMPROVEMENT FOR TWO LANES OF TRAFFIC ON 100 FT. RIGHT OF WAY


A wide shoulder reservation provides space for the ultimate construction of a permanent parking lane for motor vehicles and the eventual placement of public utility services underground for safety
No-ditch section
30 Graded roadbed section for ultimate 40 ft surfacing
Present 20 ft surfacing
Border control area (26') available for slope grading, foot paths and planting
(Scenic or planting easement)
Planning, including zoning, furnishes an intelligent and effective method of regulating land uses and building development along the roadsides so as to prevent and reduce those uses which are detrimental to the public welfare and safety; putting billboards, filling stations, and the like in their proper and appropriate and harmless locations, treated not separately, but as an integral part of highway planning
Supplement border control through the protective zoning of this transition area
120' Right of way (exclusive of areas required for borrow ditches)
Building set back line for improvements
Building set back line

TYPICAL CROSS SECTION OF IMPROVEMENT PLANNED TO PROVIDE FOR FUTURE WIDENING TO FOUR LANES OF TRAFFIC ON 120 FT. RIGHT OF WAY



APPROXIMATE DISTRIBUTION OF AREA 100 FT. R.O.W. SECTION FOR 2 LANE HIGHWAY



APPROXIMATE DISTRIBUTION OF AREA 120 FT. R.O.W. SECTION FOR 4 LANE HIGHWAY

1933

PLATE I

U.S. DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DIVISION OF DESIGN

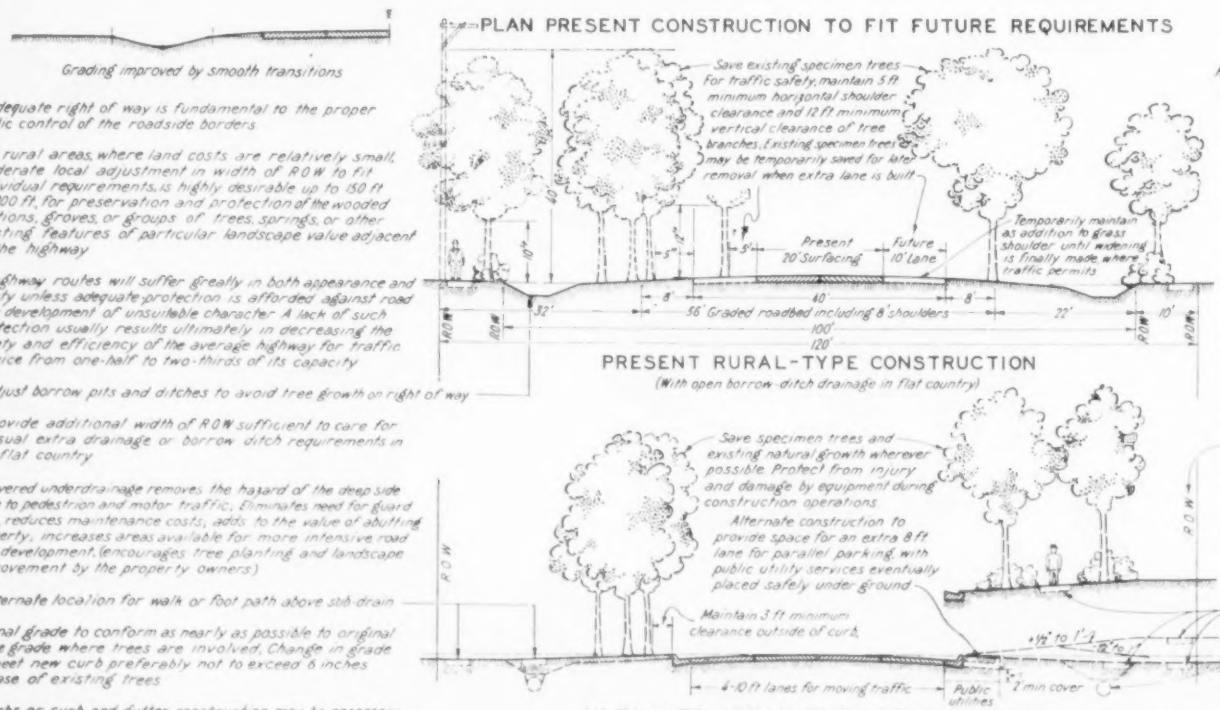
PLANNING FOR ROADSIDE IMPROVEMENT

ECONOMIC PURPOSE:-
AIMS TO FIT THE DETAILS OF HIGHWAY CONSTRUCTION IN CLOSER RELATIONSHIP WITH THE SURROUNDING COUNTRYSIDE.

PRACTICAL RESULTS:-
PROVIDES FULLEST PUBLIC SERVICE AT REASONABLE COST. SPREADS EMPLOYMENT OVER ALL SEASONS OF THE YEAR. DISTRIBUTES THE BENEFITS OF DIVERSIFIED EMPLOYMENT AMONG ALL COMMUNITIES.
ELIMINATES A LARGE NUMBER OF TRAFFIC HAZARDS. REDUCES WASTEFUL EROSION AND MAINTENANCE. CONSERVES AND ENHANCES HIGHWAY VALUES. PROTECTS THE EFFICIENCY OF THE INVESTMENT. PRODUCES A NATURAL HARMONY OF ENVIRONMENT FOR A MORE COMPLETE AND FULLY EFFICIENT HIGHWAY.

GENERAL POLICIES:-
PROPER LOCATION AND DESIGN OF A HIGHWAY IS THE PHYSICAL FOUNDATION FOR A CONSTRUCTIVE IMPROVEMENT. ECONOMIC CONSERVATION OF EXISTING NATURAL SCENIC RESOURCES IS THE KEY TO A COMPLETE HIGHWAY DEVELOPMENT.
PROTECTIVE BORDER CONTROL IS VITAL TO INSURE AN ORDERLY AND CLEAN ROADSIDE APPEARANCE. INTRODUCTION OF APPROPRIATE PLANTING IS THE FINAL PHASE OF A LOGICALLY DEVELOPED COMPREHENSIVE ROADSIDE IMPROVEMENT PROGRAM.
A DEFINITE PLAN AND POLICY SHOULD BE ADOPTED AND CONTINUOUSLY FOLLOWED. AS THE ULTIMATE DEGREE OF THE USEFULNESS OF IMPROVED HIGHWAYS DEPENDS ENTIRELY UPON STRICT ADHERENCE TO A BUDGETED PROGRAM.

ROADSIDE IMPROVEMENT MAY BE APPLIED TO EXISTING OLD ROADS AND ENTIRELY NEW ROADS OF VARIOUS CLASSES


PLAN PRESENT CONSTRUCTION TO FIT FUTURE REQUIREMENTS
Save existing specimen trees
For traffic safety, maintain 5 ft minimum horizontal shoulder clearance and 12 ft minimum vertical clearance of tree branches. Existing specimen trees may be temporarily saved for later removal when extra lane is built
Present 20' Surfacing
Future 10' Lane
Temporarily maintain as addition to grass shoulder until widening is finally made where traffic permits
56' Graded roadbed including 8' shoulders
PRESENT RURAL-TYPE CONSTRUCTION
(With open borrow-ditch drainage in flat country)
Save specimen trees and existing natural growth wherever possible. Protect from injury and damage by equipment during construction operations
Alternate construction to provide space for an extra 8 ft lane for parallel parking with public utility services eventually placed safely under ground
Maintain 3 ft minimum clearance outside of curb
4-10 ft lanes for moving traffic
Public utilities
2 min cover
Ground surface
ULTIMATE URBAN-TYPE DEVELOPMENT
(With open ditches eliminated by underdrains)

Grading improved by smooth transitions

Adequate right of way is fundamental to the proper public control of the roadside borders.

In rural areas, where land costs are relatively small, moderate local adjustment in width of R.O.W. to fit individual requirements, is highly desirable up to 150 ft. or 200 ft. for preservation and protection of the wooded sections, groves, or groups of trees, springs, or other existing features of particular landscape value adjacent to the highway.

Highway routes will suffer greatly in both appearance and safety unless adequate protection is afforded against road side development of unsuitable character. A lack of such protection usually results ultimately in decreasing the safety and efficiency of the average highway for traffic service from one-half to two-thirds of its capacity.

Adjust borrow pits and ditches to avoid tree growth on right of way.

Provide additional width of R.O.W. sufficient to care for unusual extra drainage or borrow ditch requirements in low flat country.

Covered underdrainage removes the hazard of the deep side ditch to pedestrian and motor traffic. Eliminates need for guard rails, reduces maintenance costs, adds to the value of abutting property, increases areas available for more intensive road side development, (encourages tree planting and landscape improvement by the property owners.)

Alternate location for walk or foot path above sub-drain.

Final grade to conform as nearly as possible to original slope grade where trees are involved. Change in grade to meet new curb preferably not to exceed 6 inches at base of existing trees.

Curbs or curb and gutter construction may be necessary in populated areas, subject to suburban improvement, subdivision development, etc.

Naturally rounded surfaces avoid artificial appearance.

Properly designed, well located highways that conserve and protect existing natural values, cannot fail to be economically safe and attractive.

10 ft lane units are the basis for determining the paved surface width required for fast moving, mixed traffic.

A highway may be aligned to take advantage of beautiful vistas, and, clearings may be made to open distant views.
Trees often may be saved at slight cost through minor adjustment in location of highway construction.

Incidental improvement includes efforts to maintain attractive areas existing on tracts adjacent to the highway, and to save specimen trees and clumps of growth on the highway right of way itself.

At entrances to villages and towns some new planting may be necessary.

No clearing of right of way to be done until a thorough inspection has been made for possible preservation of existing growth, and the trees and shrubs to be retained carefully and clearly marked.
More immediate results are effected through the preservation of existing desirable growth.
Scenic easements or planting easements may be substituted for actual purchase, in some cases, where such conservation methods may prove mutually advantageous and agreeable.

Alternate locations of footpath possible where subdrains are constructed to eliminate hazardous side ditch.

Slope to have minimum pitch of ½ inch per foot between curb and property lines, according to soil and drainage requirements.

The cost of thoroughly draining the average highway to increase the effective life of the improvement is relatively small compared with the total cost of project. By properly planning for the future with a complete and definite cross section as a final objective for each class of highway, the improvement will eventually be developed into a systematic and orderly highway, producing the maximum in public service at the lowest possible cost.

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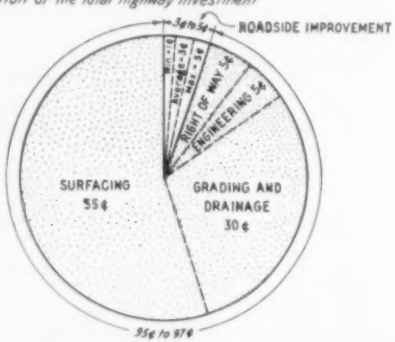
PLATE II

PLANNING FOR ROADSIDE IMPROVEMENT

THE WORK OF ROADSIDE IMPROVEMENT IS LARGELY HANDWORK
A WELL BALANCED PROGRAM OF ROADSIDE IMPROVEMENT UTILIZES UNSKILLED LABOR TO A MAXIMUM DEGREE
MORE THAN 90 PERCENT OF EVERY DOLLAR SPENT FOR THIS KIND OF CONSTRUCTIVE WORK ULTIMATELY ARRIVES IN THE PAY ENVELOPE OF LABOR
OF THIS AMOUNT APPROXIMATELY 65 TO 70 PERCENT IS A DIRECT BENEFIT TO LOCAL LABOR AND
25 TO 30 PERCENT IS A BENEFIT TO OTHER LABOR INDIRECTLY ENGAGED IN SUPPLYING PLANT MATERIALS
ROADSIDE IMPROVEMENT WORK WHILE PROVIDING SO EFFECTIVELY FOR THE DIRECT EMPLOYMENT OF LABOR
ALSO CREATES TANGIBLE VALUES OF A REASONABLY PERMANENT NATURE SO NECESSARY TO THE NEW SOCIAL ORDER
CONSTRUCTIVE WORK OF THIS IDEAL CHARACTER IS ESSENTIAL TO THE ECONOMIC CONSERVATION OF THE PUBLIC HIGHWAY INVESTMENT

Approximate cost of conservation development with appropriate planting represents only a relatively small portion of the total highway investment



OUT OF EVERY HIGHWAY DOLLAR EXPENDED FOR A COMPLETE AND BALANCED IMPROVEMENT:

5¢ (or less) is the relative average cost of comprehensive roadside improvement
95¢ (or more) is for rights of way, supervision, grading, drainage and surfacing
$1.00 Total

The average expenditure required for comprehensive roadside improvement varies from 3 percent to 5 percent of the total cost per mile of a complete highway.
Individual estimates may be as low as 1 percent where the existing conditions are highly favorable.
Approximately 5 percent is required where the local conditions are unusual or difficult.
3 percent represents the general average for a comprehensive program of roadside planting and development.

Roadside improvement estimates for typical demonstration projects, on this assumed basis, average as follows:

Primary highway construction: Total cost per mile = 100%	Comprehensive roadside improvement: Average cost per mile = 3%
$15,000.00	$ 450.00
25,000.00 (estimated average cost)	750.00
35,000.00	1,050.00

One 10 mile unit of roadside improvement at the estimated average cost of $ 750 per mile ($ 7,500) is approximately equivalent to the cost of one-mile of low type highway construction ($ 7,500).
At least three typical 10 mile units, or a total of more than 30 miles of roadside improvement is approximately equivalent to the cost of one-mile of high-type highway construction ($ 25,000).

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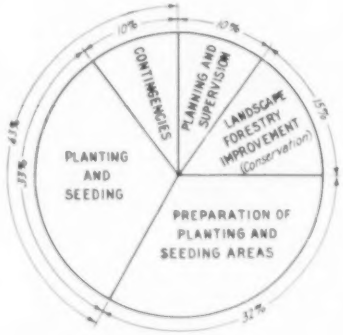
90¢ OR MORE OF THE ROADSIDE IMPROVEMENT DOLLAR BENEFITS LABOR
APPROXIMATELY TWO-THIRDS GOES DIRECTLY TO LABOR ON THE JOB
NEARLY ONE-THIRD GOES INDIRECTLY TO LABOR SUPPLYING THE MATERIALS USED

RATIO OF DIRECT AND INDIRECT LABOR EMPLOYMENT RESULTING FROM ROADSIDE IMPROVEMENT EXPENDITURES

On roadside improvement projects:
65¢ to 70¢ of every dollar is spent directly on the job for the effective employment of labor and
25¢ to 30¢ is spent for the benefit of labor employment indirectly through the purchase of plants and incidental materials.
90¢ or more = Total labor benefit for such expenditures

Roadside improvement is a most effective means of spreading work where labor employment is most needed



OUT OF EVERY DOLLAR EXPENDED FOR A TYPICAL COMPREHENSIVE ROADSIDE IMPROVEMENT

10¢ is the approximate cost of detailed planning and competent supervision
15¢ is required for basic conservation work (landscape-forestry improvement)
32¢ is necessary for thorough advance preparation of planting and seeding areas
33¢ is the average amount expended on the actual work of planting and seeding
10¢ is needed for contingency operations due to abnormal weather conditions
$1.00 Total

Roadside improvement affords unusual opportunities for the constructive employment of unskilled labor directly on the job in the locality of the work.
Two-thirds to three-fourths of such work includes planning and thoroughly preparing the area in advance of planting, in addition to the final work of actual planting and seeding operations. (Direct employment)
Only one-fourth to one-third of the total cost of the work is required for plant materials, tools and incidental equipment (indirect employment).
The inclusion of roadside improvement work as a definite and tangible part of highway construction, therefore, aids materially in the better balancing of the highway program to serve the employment needs of populated centers.

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PLATE IIA

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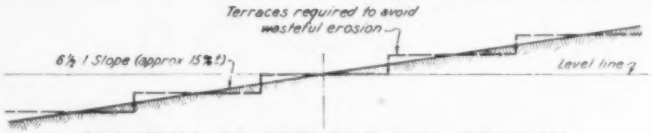
CONSERVATION

A PRIMARY PURPOSE OF ROADSIDE IMPROVEMENT IS TO CONSERVE AND DEVELOP THE NATURAL GROWTH ALONG THE HIGHWAY BORDERS

THE ECONOMIC FUNCTION OF THE MODERN HIGHWAY SECTION IS TO BUILD INHERENT SAFETY AND FUNDAMENTAL APPEARANCE INTO THE VISIBLE SURFACE FEATURES OF THE COMPLETED CONSTRUCTION WITH A PRINCIPLE CONSIDERATION OF THE DRIVER AT THE WHEEL



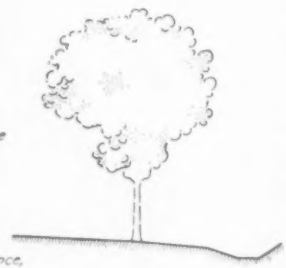
PLANTING TO PREVENT SOIL EROSION

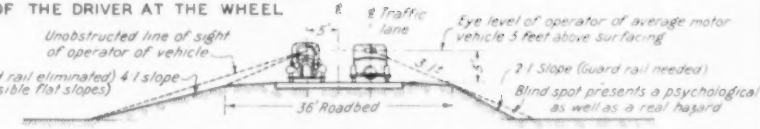
On cultivated land, erosion takes place on hillsides of approximately 15% or more slope. The land use conservation policies of the United States Department of Agriculture recommend terracing marginal lands with a slope of 15% or steeper, if to be retained economically in cultivation, otherwise such lands should revert to a vegetative cover of pasture or forest, so that the roots of the trees and secondary undergrowth or grasses, may prevent wasteful erosion.

Similarly, erosion along the national highways may be prevented by seeding, sodding, or planting the shoulders and slopes, as the final part of a comprehensive roadside improvement program.

In reducing erosion, the annual cost of maintenance is correspondingly decreased, and the safety and general appearance of the highways as a continuing investment proportionately increased.

To eliminate the hazard of soft, eroding roadway shoulders, thoroughly prepare newly graded raw earth roadside areas, by adding loam (topsoil) and fertilizer, to assure the quick establishment, and economical maintenance, of a consolidated vegetative growth of grass or other appropriate ground cover planting.




8' Traffic lane
5'
Eye level of operator of average motor vehicle 5 feet above surfacing
Unobstructed line of sight of operator of vehicle
(guard rail eliminated) 4:1 slope (on visible flat slopes)
2:1 Slope (guard rail needed)
Blind spot presents a psychological as well as a real hazard
36' Roadbed

GRADING TO ELIMINATE TRAFFIC HAZARDS

On earth filled embankment portions of typical highway sections, the line of sight of the motor vehicle operator over the edge of the roadway (8') shoulder is approximately equivalent or parallel to a 3:1 slope, as shown above on the right.

The bottom of any slope steeper than 3:1, therefore, is hidden from view. The blind spot resulting from a 2:1 slope produces a mental driving hazard, which explains and justifies the psychological need for guard rail.

Slopes flatter than 3:1 remain in full view of the highway user.

The 4:1 slope section on the left shows the clear angle of vision afforded to the bottom of the slope, which eliminates the psychological need for guard rail.

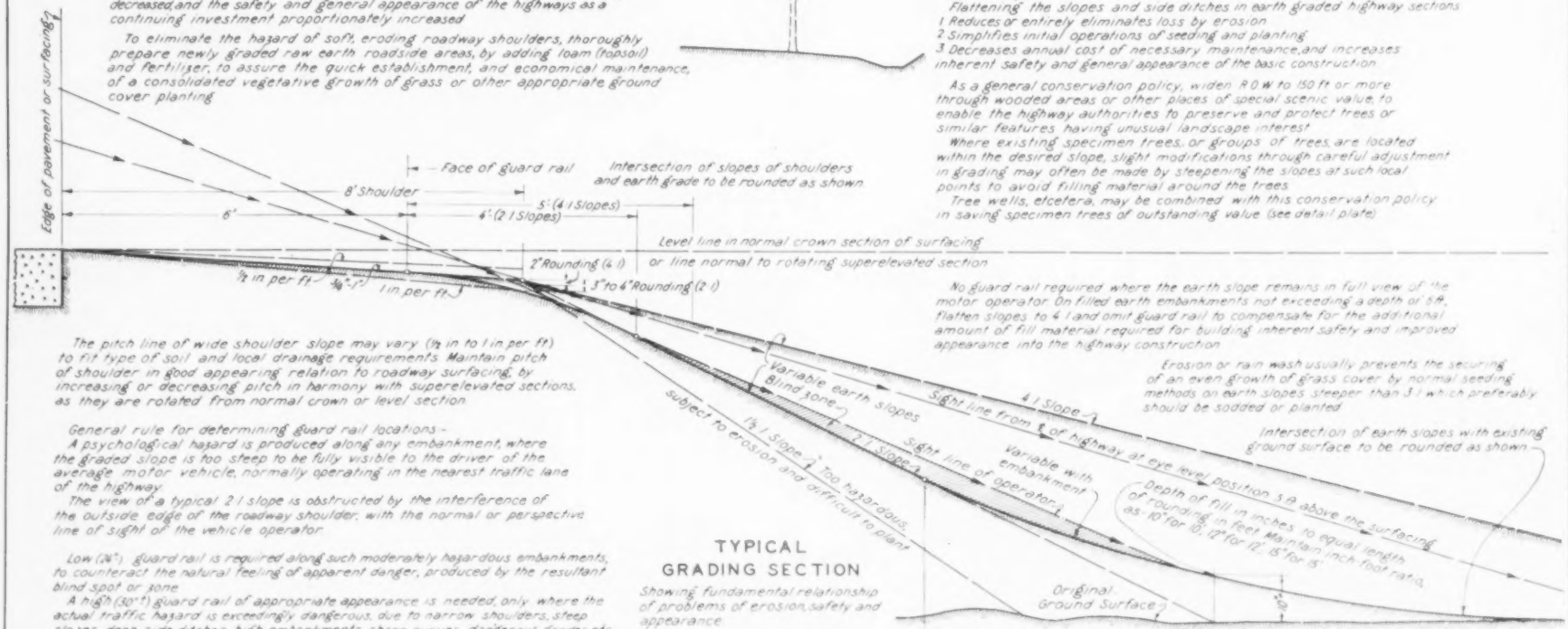
Earth slopes flatter than 3:1 thus conserve highway expenditures.

Flattening the slopes and side ditches in earth graded highway sections:
1 Reduces or entirely eliminates loss by erosion.
2 Simplifies initial operations of seeding and planting.
3 Decreases annual cost of necessary maintenance, and increases inherent safety and general appearance of the basic construction.

As a general conservation policy, widen R.O.W. to 150 ft or more through wooded areas or other places of special scenic value, to enable the highway authorities to preserve and protect trees or similar features having unusual landscape interest.

Where existing specimen trees, or groups of trees, are located within the desired slope, slight modifications through careful adjustment in grading may often be made by steepening the slopes at such local points to avoid filling material around the trees.

Tree wells, etcetera, may be combined with this conservation policy in saving specimen trees of outstanding value (see detail plate).


Edge of pavement or surfacing
Face of guard rail
Intersection of slopes of shoulders and earth grade to be rounded as shown
8' Shoulder
6'
5' (4:1 Slopes)
4' (2:1 Slopes)
Level line in normal crown section of surfacing
or line normal to rotating superelevated section
2" Rounding (4:1)
3" to 4" Rounding (2:1)
½ in per ft
¾" - 1"
1 in per ft
Variable earth slopes
Blind zone
Sight line from ℄ of highway at eye level position 5 ft above the surfacing
4:1 Slope
Sight line of operator
2:1 Slope
Variable with embankment
Depth of fill in inches to equal length of rounding in feet. Maintain inch-foot ratio as: 10' for 10", 12' for 12", 15' for 15"
1½:1 Slope too hazardous, subject to erosion and difficult to plant
Intersection of earth slopes with existing ground surface to be rounded as shown
Original Ground Surface
Length of rounding of bottom of slopes to maintain a ratio of ½ times the height of the fill
10' Minimum for 6½ ft embankment
(12' for 8' embankment) (15' for 10' embankment, etc)

The pitch line of wide shoulder slope may vary (½ in to 1 in per ft) to fit type of soil and local drainage requirements. Maintain pitch of shoulder in good appearing relation to roadway surfacing, by increasing or decreasing pitch in harmony with superelevated sections, as they are rotated from normal crown or level section.

General rule for determining guard rail locations:-
A psychological hazard is produced along any embankment, where the graded slope is too steep to be fully visible to the driver of the average motor vehicle, normally operating in the nearest traffic lane of the highway.
The view of a typical 2:1 slope is obstructed by the interference of the outside edge of the roadway shoulder, with the normal or perspective line of sight of the vehicle operator.

Low (24") guard rail is required along such moderately hazardous embankments, to counteract the natural feeling of apparent danger, produced by the resultant blind spot or zone.
A high (30") guard rail of appropriate appearance is needed only where the actual traffic hazard is exceedingly dangerous, due to narrow shoulders, steep slopes, deep side ditches, high embankments, sharp curves, dangerous grades, etc.
Modern construction aims to eliminate the majority of such hazards to public safety as rapidly as possible.

TYPICAL GRADING SECTION

Showing fundamental relationship of problems of erosion, safety and appearance.

No guard rail required where the earth slope remains in full view of the motor operator. On filled earth embankments not exceeding a depth of 6 ft, flatten slopes to 4:1 and omit guard rail to compensate for the additional amount of fill material required for building inherent safety and improved appearance into the highway construction.

Erosion or rain wash usually prevents the securing of an even growth of grass cover by normal seeding methods on earth slopes steeper than 3:1 which preferably should be sodded or planted.

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PLATE III

methods and organizations in both the state and Federal highway agencies that will be necessary to carry on similar work on an extensive mileage in the future.

The primary purpose of the Recovery Act is to put men to work. Under the program of emergency construction being speeded toward this objective by the Special Board for Public Works, a state cannot expend more than 50 per cent of its allotment on the Federal-aid system outside of corporate limits of municipalities; it must spend at least 25 per cent of its allotment on extensions of the Federal-aid system into and through municipalities; and it cannot expend more than 25 per cent on secondary or feeder roads until the state's initial Federal-aid system is 90 per cent completed. In submitting projects for approval, state highway departments must show that the state's allotment will be expended in at least 75 per cent of all counties of the state unless employment is more acute in a smaller percentage of counties or suitable projects cannot be found in 75 per cent of the counties. Definite requirements of this fundamental nature have been incorporated in the present program of highway improvement to expedite the efficient employment of labor on a nation-wide scale.

The practical planning of the Recovery highway program aims to put as many men as possible back to work as quickly as possible, and to pay them a living wage. The 30-hour week and a minimum wage for various sections of the country have been established. Men will be hired from employment lists prepared by State Directors of Reemployment. The main idea is to see that the projects undertaken are sound and useful, and ready for early execution. Normal and efficient methods and practices are specified, so that the cumulative effects may extend to the mills, shops, quarries, factories, and nurseries that produce the materials and equipment normally used in highway construction and improvement operations. The work will be done through regular construction organizations under the immediate direction of the state highway departments. Every element in the structure of the highway industry will feel the quickening impulse that the constructive employment of more than a half-million men will bring.

The highway Recovery program marks the opening of a more balanced conception by the people of the possibilities afforded in the planned-development of highways. Highway improvement work, while providing for the effective employment of labor, also creates tangible values of a reasonably permanent nature so necessary to the new social order. It is good business for the nation to plan for the economic conservation of its highway investment.

Adapted from a paper presented by Wilbur H. Simonson, Landscape Architect, U. S. Bureau of Public Roads, at the Conference on Planning and National Recovery, at Washington, D. C., October, 1933.

The preceding four pages are reproductions of new charts of roadside improvement information, prepared under Mr. Simonson's direction:

Plate I shows importance of adequate right-of-way;

Plate II outlines general principles and policies;

Plate II-A presents the labor employment value of roadside improvement work;

Plate III empha-izes the conservation and safety problems involved.

How the Public Works Emergency Housing Corporation Will Function

SINCE the announcement of its incorporation was made, a few weeks ago, many questions have been asked as to how the Public Works Emergency Housing Corporation will function, and whether its creation is to be construed as the expression of a change of policy in respect to applications submitted by limited-dividend corporations, municipalities, and public housing authorities In a statement released December 10 Harold L. Ickes said in part:

"It continues to be the policy of the Public Works Administration to encourage local study and promotion of low-cost housing. The Public Works Administration will continue to loan on slum clearance operations and low-cost housing projects sponsored by limited-dividend corporations. Such corporations have a distinct advantage in certain fields of activity. It is the intention of the Public Works Administration to take the initiative in slum clearance and low-cost housing projects in the interest of unemployment relief and recovery, only in cases where local agencies are unable to do so or unwilling to act promptly. Such projects will be undertaken by the Public Works Emergency Housing Corporation upon invitation from local officials and/or groups of representative and responsible citizens or civic organizations. Where the Housing Corporation initiates, local groups and agencies will be utilized to the fullest extent possible in the acquisition of sites, design, construction, and operation of the projects.

"In the course of recovery it may be assumed that existing vacancies will disappear and that there will be demand for vacant sites and for urban and suburban houses. By confining the work of the Emergency Housing Corporation at the present time to the clearance of slums and the production of a like number of low-cost units, limited as to rentals and restricted as to occupancy to the low-income groups, the Administration can stimulate one of the basic industries without encroaching upon its field of future opportunity.

"For projects presented by limited-dividend corporations, the desire to dispose of vacant land and to gain from the design and construction of a project is not sufficient to meet the requirements. Responsibility for initiative, ownership, and operation must be sponsored by local civic bodies. Reasonable evidence must be produced of need for housing of this character and rental price. Since as much as 85 per cent of the total cost may be loaned on preferred projects of this class, the nature of the equity is a matter of first importance. The Government is primarily concerned with the continuing interest and responsibility of the sponsors of the project and of the holders of the equity during the life of any loan. It follows that the equity must be established by the investment of other than the profits derived from the operation. Land, reasonably appraised for the use of low-cost housing, will be considered as equity: a small proportion of the equity may be established by the investment of earned fees. A certain proportion of cash investment will be required.

"Where a city or housing authority is legally empowered to prepare and carry out well-considered projects of low-cost housing, the Administration will be particularly interested to find ways by which such projects can be helped financially and otherwise. The same is true in instances where for the time being a city has not the legal powers but will agree to make every effort to secure satisfactory enabling legislation in the future. It is in such cases that the Housing Corporation can function most effectively in this emergency. Except in unusual cases, the aim of the Public Works Administration in all of these municipal housing projects would be to confine the work of unemployment relief to slum clearance. Such a preference does not exclude the use of vacant land where it may be found advantageous to combine the use of vacant land with a clearance operation. . . . In any case, preference will be given to projects located in congested areas occupied by obsolete structures in an advanced stage of decay or dilapidation. Preference likewise will be given to sites closely related to opportunities for employment and to sites well studied in relation to a long-term regional plan.

"To qualify as 'low-cost' land, the price given in the financial set-up must be such as to permit of the erection of low structures. . . . Low rentals are not possible in high buildings of high construction and operating costs. Sites of higher unit price than will permit low rentals will be looked upon as having been appraised with a view to their being used for some other purpose than housing the low-income group.

"To qualify as a low-rental project in a given case, the range of rentals proposed must correspond to those currently paid in the community by that family income group for which the project was designed. Municipal housing projects and those presented by Housing Authorities must show a rent level so far below any commercially produced as not only to put it outside of any possible competition with existing decent housing but unquestionably meeting the needs of an income group never before accommodated. It must be controlled by a socially minded agency which will insure its use beyond question to those for whom it is built."

Can Refuse Collection and Disposal Systems Be Improved?

By HARRISON P. EDDY, JR.
Partner in the Firm of Metcalf & Eddy, Engineers, Boston, Mass.

IT is possible to look forward with considerable hope to an improvement in the administration of municipal utilities in which operation is based primarily on engineering principles. Among such may be included refuse collection and disposal services. While in many cities this work is done today with efficiency and economy and a proper appreciation of the engineering principles involved, in many other cities and towns, it is believed, these principles are not thoroughly appreciated. With the tremendous increase in the number of technical university graduates and of technological unemployment, it is probable that many more technically educated engineers will participate in the routine operating services of cities.

A substantial improvement may be obtained in cities which adopt a service charge against the householder for the operation of the collection and disposal works, particularly if the money so received is ear-marked for the sole use of the refuse collection and disposal department. In this way the department may become independent of the appropriating power of the city government and thereby may have funds available for proper maintenance of equipment and increase in plant when this may become necessary.

While many directors and employees now are competent, experienced men, there often is room for substantial improvement by rigid adherence to the policy of basing all appointments solely on merit.

Improvement in Design of Disposal Works

There is substantial room for improvement in design of refuse disposal works. Improvements in design will tend first toward greater life of the equipment; better provision will be given to withstanding the resistance to operating conditions which cause deterioration; operating conditions will be simplified and improved. Already, substantial advance has been made in this direction. With the purchasing of disposal works based on the engineering merits of the design, a great forward step will be taken.

Advance in Operating Methods

The greatest single advance in refuse disposal will come in improvements in the operation of the disposal works. When the engineering principles involved are properly appreciated, incinerators, for example, will be operated at a uniform rate throughout the day, rather than at a high rate for a short time followed by complete cessation of operation. Alternate heating and cooling of the refractories permits periods of low temperature operation during which combustion may not be satisfactory, and sudden temperature changes cause rapid expansion and contraction of materials and rapid deterioration of plant in general. Basing the capacity of a plant on 24-hour operation instead of 8-hour operation, permits a great decrease in the capital invested and in the fixed charges per ton of material disposed of.

Greater attention should be given to the maintenance of cleanliness about disposal works. While this seems trite, there can be no question that rigid cleanliness in a plant dealing with material of this nature in such tremendous volumes, will result, first, in a much higher morale among the operating staff; second, a coincident improvement in the care given the physical equipment, with a corresponding increase in its life; third, more efficient operation because of the pride taken in the works; fourth, greater respect for the operation of the department, among the public and the city officials who appropriate the funds required for operation. This—rather than careless methods of operation—will make it easier to secure the funds needed.

What of the Collection System?

So far we have dealt only with the disposal system. The collection system is an entirely different function, but susceptible to great improvement due to the same basic factors. There is a tremendous variation in the type of equipment used for this service, thus calling for sound engineering study of the requirements of the city in selecting suitable equipment. There is apparently a greater tendency to assume that European methods are superior to ours in the field of refuse collection than in any of the other municipal services with which public health engineers customarily deal. While much has been said of the difference between the material collected in Europe and in this country, I doubt whether this difference is always appreciated, and little is said of the difference in wage rates in Europe and in this country. Both of these factors should be given serious consideration in comparing foreign practice with home practice.

Possibly the greatest single opportunity for improvement in collection services lies in studying the various problems which arise, on a unit basis, such as the work done in cubic yards, tons, man-hours, vehicle-hours, and ultimately in dollars per unit, rather than by reasoning in generalities from a comparison of the total costs of one city with those of another. Probably there are no two cities where the per capita costs of equally efficient services using identical equipment would be the same, on account of the many variable features in the problem, such as different street layouts in the two cities, different topography, different operating personnel, and many other features.

There is no question that the efficient operation of a refuse collection service demands the driving energy of

a practical man. In the larger cities there should be available the services of a trained engineer to gage the unit cost of the work and its efficiency, and to make changes in district and route boundaries from time to time, as these become advisable from the standpoint of economy.

Recently we have heard a great deal regarding technological unemployment and a shorter working day. Months ago industry signed the President's Unemployment Agreement, called the "blanket code," but our municipalities in general have not joined the NRA. If we look back a generation, we shall find that our municipalities and government services in general have been the leaders in shortening working hours, and that industry has followed along behind, but has come into step after some delay.

In some cities the refuse collection service offers an example in regard to the use of a shorter working day in municipal activities. For many years in cities where the 8-hour day is required by law it has been rather common practice to divide the work of the city among the collection crews so that each crew had its daily stint. In stormy weather and during peak seasons each crew is required to clean up its district, regardless of the number of hours demanded, without additional compensation for any overtime which might be required. This is offset, however, by the practice of placing the men "on their own" and releasing them when the work is done. In this way it has been found that in some of our better-organized collection services the men frequently finish a reasonable 8-hour day's work in considerably less than 8 hours. The dispatch with which the men work under these conditions, always assuming that thoroughness is insisted upon, brings about a better service at no additional cost to the taxpayer.

Improvement? By All Means Yes!

In conclusion, the answer to the title question is "Yes." Refuse collection and disposal systems can be improved by placing the work in the hands of practical men and engineers; by taking the operation away from boards of health, doctors and laymen, but leaving the privilege of making complaints against poor service to the boards of health; by making engineering studies of the work done by units of cost and work accomplished, rather than by comparing the work of one city with that of another.

The operating services of municipalities can be improved and at the same time provide an outlet for the increasing number of graduates from universities by diverting them from the construction or producing field into the operating or consuming field. If the country has reached the point economically where new construction or additional productive units are required to a lesser degree than in the past, some outlet such as this will be needed for many of these technical men. A great hope for improvement in these systems lies in utilizing their trained services.

ACKNOWLEDGMENT.—From a paper presented before the Public Health Engineering Section, American Public Health Association.

National Planning Board Spurs State and Local Activity

TO stimulate the organization of state planning boards, the enactment of state planning legislation, and the formulation of state, regional and city plans, the National Planning Board is preparing to make prompt and efficient use of the allotment of $250,000 for these purposes, reported in THE AMERICAN CITY last month (page 73 of the December issue). In its "Fifth Circular Letter," dated December 11, the Board says:

"The Federal Emergency Administration of Public Works has allocated funds for the employment by the National Planning Board of qualified planning experts whose services will be available on selected regional and state planning projects where state or regional planning agencies may be found ready to cooperate. It is hoped that state cooperation will be forthcoming which, with the assistance of the technical leadership contributed by the Federal Government, will make possible the completion of at least a preliminary plan within six months from the appointment of the adviser."

Among the conditions which the National Planning Board has laid down for state planning agencies requesting assistance, are:

1. Appointment by the Governor of an unpaid state planning board, including perhaps four department heads, such as public works, highways, conservation and health, together with three citizens.
2. Assurance by the Governor that if this state planning board gets under way he will sponsor some legislation to put it on a continuing basis.
3. The assignment from existing state offices or application to the Civil Works Administration for drafting and stenographic help to carry on the work of the proposed board.
4. Development of a planning program, giving the status of planning work already done and outlining specific studies to be undertaken in, say, the next six months. It is hoped that this program will include a land-use study, a ten-year program of public works, and perhaps a study for the integration of the transportation system within the state.
5. Any suggestions the Governor or the new board may wish to make of a qualified planner to direct the work.
6. Statement of the Governor's willingness to appoint the planner on a regional or interstate planning committee, if such committee is organized.

The circular letter offers suggestions in some detail under the following headings:

- Suggestions on State Planning Legislation
  - Act for Creation of a State Planning Board
- Organization of State Planning Boards
  - Officers and Staff
- A Preliminary State Plan
- Procedure for Studies
  - General Survey
  - Research
- Preparing the Plan
- Approaches and Items for Consideration
  - Public Works Program
  - Land Planning
  - Transportation
  - Housing
  - Population and the Social Survey
  - Conservation of Natural Resources
  - Recreation
  - Distribution of Industry
  - Water Resources
  - Fiscal Programming
  - Governmental Reorganization

The text of "an act to promote more economical and orderly development of the state through the creation of an unpaid state planning commission," based on proposed Massachusetts legislation, is also presented.

Copies of the above-mentioned circular letter and other information from the National Planning Board are obtainable from the Board's Executive Officer, Charles W. Eliot, 2nd, Interior Building, Washington, D. C.

Results of Improvements in the Neodesha Water Filtration Plant

By FRED K. VANCE

Superintendent, Light and Water Department, Neodesha, Kans.

THE water works, like the electric plant, of Neodesha, Kans., has gone through changes for improvement and modernization. Established in 1907, it was one of the first gravity filter plants in Kansas. Judged by present-day standards and demands for a better quality of water, the plant was rather crude, but it served after a fashion until supplanted with a modern clarification, filter and softening plant in 1931.

The water supply is taken from the Fall River, a short distance above its confluence with the Verdigris. Since the water varies widely, both in turbidity and hardness, it presented an interesting problem of treatment. During spring and summer, the turbidity will range from 200 to 5,000 parts per million and the total hardness may reach 350 parts per million. In addition, the growth of the territory tributary to the Fall River was considerable and several towns above Neodesha had installed sewer systems. The bacterial load in the water had become so great that some surer treatment was necessary. Another problem was the occurrence of tastes and odors traceable to refinery wastes.

When the new water purification plant was under consideration, a study was made of the costs of purification and of purification with softening. Since the cost of the latter was considerably higher, before a definite decision was made as to what type of plant should be built, it was decided to let the voters show their preference at the bond election. The vote was overwhelmingly in favor of softening, and in the fall of 1930 construction work was started. In addition to building a purification plant suitable for the city's needs, it was to be architecturally constructed to be in keeping with the power-plant building and add to the beautification of the City Park.

The performance of the plant has more than fulfilled expectations. It is possible to take a turbid, highly polluted river water and furnish a safe drinking water with an average hardness of 80 parts per million.

Because of the variable character of the river water, the treatment plant had to be made quite flexible in the matter of chemical treatment, and it was designed to soften 2,000,000 gallons per day. Provision was made for treating with alum, lime (either quick or hydrated), soda ash, ammonium sulphate, chlorine, carbon dioxide and activated carbon at suitable points through machines, which enable the operator to regulate dosages with a high degree of accuracy. Treatment is checked hourly and hardness tests are made daily. An accurate log is kept of the plant's operation.

The table at the top of the next column gives the comparative operation of the old and new plants.

	Old Plant March 1931	New Plant March 1932	Old Plant May 1931	New Plant May 1932
Hydrated lime	$7.40	$138.17	$45.08	$9.23
Quicklime	.....	.....	.....	85.98
Soda ash	.....	145.04	.....	93.19
Alum	19.50	11.90	130.80	11.31
Ammonium sulphate	.....	3.16	.....	3.23
Chlorine	7.75	3.85	7.75	5.72
Natural gas	.....	15.84	.....	6.12
Lubricating oil	1.35	2.46	1.15	1.12
Plant material	1.06	6.55	1.60	2.28
Labor	497.50	482.67	502.25	494.55
Power	412.50	365.75	400.14	372.02
Total	947.06	1,175.39	1,088.77	1,085.35
Million gallons pumped	22.338	20.662	22.526	19.765
Cost per 1,000 gal	.0424	.0569	.0482	.0539
Revenue for water	1,464.93	2,538.30	1,679.18	2,469.14
Average hardness—raw water	.....	300	.....	237
Average hardness at tap	.....	88	.....	83
Average hardness removed	.....	212	.....	551

New Rates for Better Water

When the new purification project was presented to the voters, it was with the understanding that the existing rates were not adequate to carry the additional operating cost and the increased fixed charges. The proposed new rates were also submitted at the bond election and met with favorable action.

COMPARISON OF OLD AND NEW RATES

Old Rate

First	4,000 gals. per mo.	$1.00	minimum
Next	50,000 " " "	.15	per 1,000
Next	1,446,000 " " "	.10	" "
All over	1,500,000 " " "	.06	" "

New Rate

First	4,000 gals. per mo.	$1.75	minimum
Next	2,000 " " "	.35	per 1,000
"	2,000 " " "	.25	" "
"	2,000 " " "	.20	" "
"	40,000 " " "	.18	" "
"	95,000 " " "	.12	" "
"	1,000,000 " " "	.10	" "
All over	2,000,000 " " "	.08	" "

So far as can now be determined, the revenue from water service is ample to pay all operating expenses and retire the bonds at maturity.

In the construction of the new plant, it was endeavored to utilize existing structures as far as possible. The old settling basin with slight changes was made to serve as the new filters. The new clear well was made by placing a concrete cover over the old filter cells and clear well. This saved about $10,000.

The New Purification Plant

Mixing Tank and Aerator.—The hopper-bottomed mixing tank has a ten-minute flowing-through period. Combined mixing and aeration are effected by compressed air applied through perforated brass pipes laid on the tank bottom. This tank is located within the building immediately below the chemical feeding machines, thus eliminating long chemical lines.

Clarifier.—A settling tank or clarifier with mechanical scrapers facilitates the removal of the heavy sludge from the softening process, and the grit encountered at times of high turbidity. Sludge can be siphoned off continuously or at intervals through adjustable sludge outlets.

Settling Tank.—The existing settling basins have been remodeled and contain about 12 hours' flow. A stilling baffle has been inserted in the first compartment, and a second compartment has been baffled to provide a recarbonation chamber, a mixing channel for alum, and a final settling basin.

Filters.—The plant has two hydraulically operated filter units, each unit having a capacity of 1,000,000 gallons per day. These discharge into a 2,000,000-gallon clear well, which in reality is the original filter plant fitted with a concrete cover slab and covered with earth. Filter wash water is stored in a 40,000-gallon elevated steel tank located at the rear of the filters.

Chemical Building.—A fireproof brick building houses the chemical feeding equipment, filters, laboratory and auxiliary plant equipment. Chemical storage is in the upper story, a loading dock and hydraulic elevator being provided to facilitate the handling of chemicals. The main floor is taken up by the filter operating room, chemical feeding room and office. The pipe gallery, filter cells, mixing basins, blower room and laboratory are on the ground level.

Recarbonator.—Carbon dioxide for the softening process is obtained by the combustion of natural gas. After being washed, cooled and passed over a bed of limestone, the gas is compressed in a rotary compressor and introduced through a grid of perforated pipes set near the bottom of the inlet end of the recarbonation chamber.

Chemical Feeding Equipment.—All chemicals, with the exception of chlorine and carbon dioxide, are fed through dry feed machines, two of which are fitted with slakers to allow the use of crushed quicklime and are suspended on dial scales to permit a ready check of the discharge. A third machine, but without slaker and mounted on a platform scale, is used with pulverized alum. These three machines are located on top of the mixing tank and have hoppers, which extend into the chemical storage room for charging. The alum machine has a double discharge; one leading directly into the mixing tank, the other into the baffled channel at the outlet end of the recarbonation chamber. A fourth dry feed machine of the rotary type is for ammonium sulphate and discharges into the outlet of the recarbonation chamber. Chlorine is applied into the filter affluent line just before it enters the clear well.

With this new purification plant, Neodesha has one of the most modern in Kansas, providing water that is soft, clear, tasteless, odorless and bacterially safe. The engineers for the city were Black & Veatch of Kansas City, Mo.

Protecting a Water-Works Intake

Riprap Checks Dangerous Erosion

THE intake of the Fort Smith, Ark., water supply is located in the Poteau River about 2 miles from its confluence with the Arkansas River. The Poteau is a lazy stream, there being no fall for approximately 15 miles upstream from its mouth. The Arkansas, on the other hand, has a very good fall. In the Arkansas River, about 8 miles upstream from the mouth of the Poteau, is located Braden Bend, where since 1912 the river has eaten back about 3,000 feet by erosion. The Kansas City Southern Railroad moved its tracks on one occasion to get away from the danger caused by these caving banks.

In 1931, the Arkansas had eaten back to a point within 300 feet of the new location of the Kansas City Southern tracks, and about 400 feet from the Oklahoma State Highway, between the city of Fort Smith, Ark., and Oklahoma City, Okla., and a little over 500 feet more from the Poteau River at a point about 6 miles above the intake from the Fort Smith city water works.

There is a stratum of quicksand in the bank averaging 3½ to 4 feet in depth, and a fine, black, loamy soil on top of the quicksand. The moderate fluctuations in the stage of the river dissolve this quicksand, and it flows out into the stream until the overburden caves down and is carried off by the river.

In 1930 the river was cutting back at a rate of 20 to 80 feet a day, depending upon the stage of the river. The Kansas City Southern Railroad took the initiative and, in cooperation with the Oklahoma Highway Department and the Fort Smith City Water Department, built a rock revetment 6,000 feet long, which was finished in February, 1931. The condition of that work today is an eloquent testimony to its merit under the peculiar conditions of that particular location.

The fluctuations in the stage of the river from 1930 to date have varied between 3 feet above low-water mark and 27.7 feet above low-water mark. Each rise has contributed its part to the deposit of silt and drift material among the rocks along the river. The shore line is today just as it was when the work was completed, with the exception that the water's edge at a stage of 4 feet above low-water mark is a good many feet farther outstream than it was when the rock revetment was started in 1930.

One of the problems in this river work was to construct the revetment so that fluctuations in the stages of the river would not finally make it possible for the river to get in behind the work at the upper end—which would mean losing the whole project. This situation was taken care of in the Braden Bend project by continuing the revetment about 150 yards upstream on the downstream bank of a creek which empties into the Arkansas River at the upper end of Braden Bend. The construction of this additional protective revetment permits the high water to deposit the silt and débris at that point as well as on the portion that protects the banks of the river itself. This extra work has been a big factor in the security and permanence of the main revetment.

W. H. VAUGHN,
Commissioner of Water Works and Engineering.

THE LOWER 4,000 FEET OF THE ROCK REVETMENT ON THE ARKANSAS RIVER

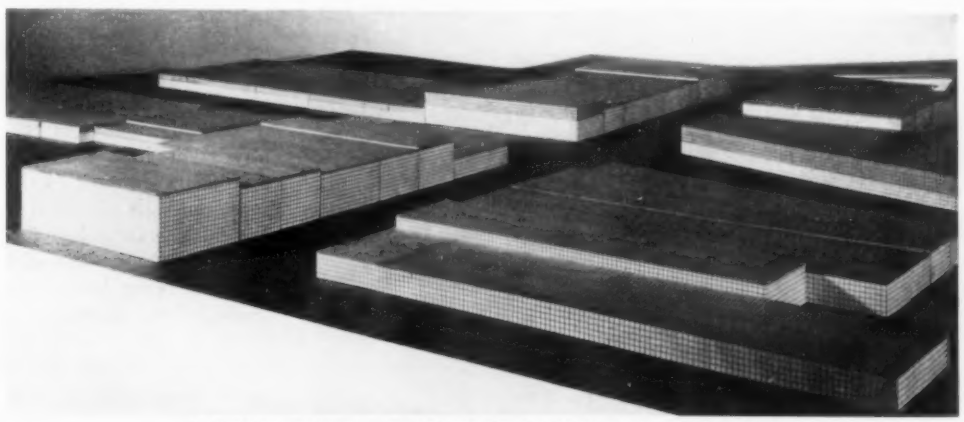
Visible Tax Values

Illustrating Special Benefit Assessments

By **PAUL A. BANKSON, C. E.**
President,
Westchester County Planning Federation,
New Rochelle, N. Y.

OWNERS of real estate whose properties face on streets where public improvements are undertaken, such as opening, widening or extending thoroughfares, are often confronted with an unusual tax bill. It is in the form of a benefit assessment additional to the customary municipal tax and supposedly represents the increased value accruing to land due to an improvement. This custom of paying, partly or wholly, for public improvements is not of recent origin. Yet, many landowners are shocked and some are arrogant when the bill is received.

The methods used for distributing these special levies, as they are named, have met with varying degrees of success. In many cases the distribution has been apportioned by those who had almost no knowledge of the subject. It is, then, no wonder that aggrieved owners employ every legitimate weapon to defeat the collection of such assessments.



A REPRESENTATION OF ASSESSMENT VALUATIONS AND LEVIES
Affording a comparison by which equity of distribution may be visualized

It may be said that no completely satisfactory method of levy has yet been evolved—but the period of economic stress has served to bring forth better results in this field of endeavor. In spite of such progress, it has always remained a mystery to Mr. Lot Owner why his property is assessed for such benefits more than his neighbor's when, apparently, like conditions prevail.

It is difficult, even for the public official who endorses the procedure, to visualize the true picture; and to the assessed landowner the tax bill brings no physical evidence of size, shape, location and permissible uses of lot. His only means of determining equity is by comparison. In the case of a special levy resulting from an improvement, the familiar sign-posts are missing.

Cubing a Special Assessment

In an effort to clarify this situation so that the layman may visualize relativty of site, location, value and tax, the writer has evolved what is termed "cubing a special assessment."

This method consists in building up with small cubes a series of blocks whose width and length, in each case, represent, respectively, the land frontage and depth of the lot. Each cube is assumed to contain 8 cubic feet (2 x 2 x 2 feet) and is given a value of $8. The height of the block is built up with light-colored cubes, as shown in the illustration, until its total value equals the present assessed land value, thus giving the taxpayers in the section represented by the series of blocks an opportunity to compare assessment valuations in relation to location, use, and other conditions. On top of each block of light-colored cubes are built up with dark-colored cubes layers representing in each case the special levy on the land for a particular improvement, thus completing the bird's-eye view of the comparative values and assessments. Fallacies in the distribution are readily discernible in such a presentation, which also tends to allay fears of discrimination.

Children's building blocks maye be used. For a 30- by 100-foot lot, arrange 50 rows of cubes, 15 to a row. This arrangement contains 750 cubes. Since each cube is worth $8, all the cubes together are worth 750 x $8, or $6,000. If the lot is valued at, say, $30,000, then five successive layers must be built up to represent that amount of money. Pictorially, the set-up shows frontage, depth and value. When the values of all the lots under consideration are thus shown and related, the picture is complete.

It may be noted that where value is uniform and levy proportional, the number of layers of cubes in the upper tier is likewise uniform. On the intersecting street the decreasing thickness of the upper tier indicates the levy grades downward to a minimum at the boundary of the area, following the formula of a curve which is a function of the distance from the improvement. In this instance the land values on the improved street are approximately one-third the values of the street at right angles to the improvement, whereas the levy, which is the benefit assumed to be derived, on the former is three times that on the latter.

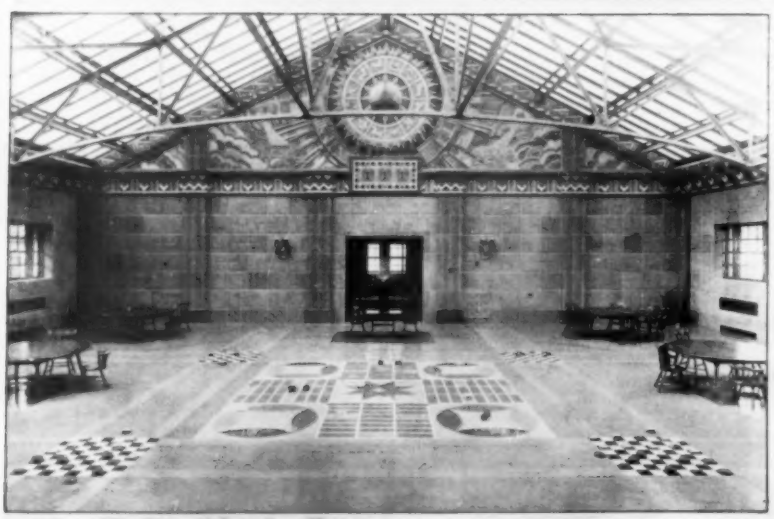
This particular model represents a portion of an area over which is distributed more than a million dollars, which is a 50 per cent levy of the cost of an improvement. The area of assessment and the distribution of levy were determined from the writer's rules based on an official city plan and assessed valuations.

Wilkes-Barre's Unique Health Center

By CHARLES B. CRITTENDEN, M.D.
Director, Angeline Elizabeth Kirby Memorial Health Center, Wilkes-Barre, Pa.

AN institution whose Board of Directors, by municipal ordinance, becomes the Board of Health of the City of Wilkes-Barre, Pa., and whose Manager is the full-time City Health Officer, is the Angeline Elizabeth Kirby Memorial Health Center, a gift of Fred Morgan Kirby. In making this Center available to the people of Wilkes-Barre and surrounding communities, Mr. Kirby stated that he desired the Center to become a means of aiding in the protection and promotion of the public health of the community. The cost of the building and the endowment amount to nearly two millions of dollars. The building is constructed of Bethel white granite; the type of architecture is predominantly Italian Renaissance. The institution is governed by a Board of Directors whose personnel is a cross-section of the professional and business life of the community.

Upon the completion of the building, all the health agencies and practically all the general welfare agencies of the community were invited to have quarters without charge in the building. Prior to that time, they had been lodged in widely scattered sections of the city. Before the erection of the Health Center, certain health services were not available in the city; namely, public health laboratory, dental clinic, X-ray diagnostic service for tuberculous cases, and a solarium for children who had been exposed to tuberculosis. These services have all been established by means of the Health Center endowment fund.



THE KIRBY HEALTH CENTER, WILKES-BARRE, AND ITS SOLARIUM FOR LITTLE CHILDREN
Violet-ray glass is used on half of both sides of the skylights in the solarium

Through the public health laboratory, routine bacteriological and chemical examinations are made of milk from dairy farms and plants. There is careful supervision of the city water supply. In addition to these routine services, free services are given to the physicians in the diagnosis of communicable diseases. Other diagnostic services, both chemical and bacteriological, are furnished free to the physicians. Cases of diphtheria and typhoid fever have routine cultures made before patients and carriers are released from quarantine. Immune sera are collected, such as poliomyelitis and measles.

The dental clinic gives free services to children up to the tenth year of age and to indigent prenatal cases. Since the clinic was started, more than 3,000 children have received free dental care. Only children are taken who cannot have the services of a private dentist.

Free X-ray service has been made available for the tuberculosis clinic patients, thus making it possible to check up the progress of the disease. Its chief use is in the early diagnosis of tuberculosis.

The solarium takes up the entire third floor of the Center. Every facility for the promotion of the health of the child is furnished. Approximately thirty children are given care each year. All receive a thorough physical examination and are immunized against diphtheria and smallpox. All remedial defects are corrected. Chil-

dren are selected primarily because of exposure to tuberculosis, but no child is selected who has the disease in an active form.

The children spend nine months at the Health Center, five days a week. The City School Board furnishes a teacher. Children who are more than six years of age are not accepted. Nurses connected with the solarium give health supervision to the children while in the solarium and in their homes.

Even though the Health Center was dedicated as recently as April, 1931, and the coordinated health program is, therefore, in the early stages of development, Mr. Kirby's gift is being made use of to the fullest extent. Each day there pass through its doors hundreds of men, women and children seeking help for mind or body from the various agencies, showing that the people feel that it is indeed the center of the community health; and with few exceptions this aid is given.

The Suburban Boomerang

By EUGENE VAN CLEEF
Department of Geography, The Ohio State University, Columbus, Ohio

THE contention that home ownership is more economical than home rental is open to challenge. The excessive cost of the suburban movement is returning to us as a boomerang returns to the sender—though unexpectedly.

Single plots owned by large numbers of average families must be located where land values are relatively low, that is, some distance from major business centers and congested apartment house neighborhoods; in fact, distance from the heart of the city is a basic consideration in the success of the movement, because among other advantages of home ownership is that of possessing space enough to raise a few vegetables, perhaps a little fruit, and flowers, and certainly to be located so that the family may bask in the sunshine, unobstructed by city smoke and fog, and breathe pure suburban ozone.

The post-war suburban concept, skilfully painted, appealed to vast numbers, and the resulting migration has brought about a permanent shift of population at an enormous cost. Today the map of almost any city reveals a conspicuous discontinuity of occupied land. On the rambling border of the city—perhaps a mile, perhaps ten miles, from its heart—there may be a suburban settlement between which and the major center there are acres and acres of land either entirely unoccupied or only occasionally interrupted by a lone dwelling. This scattered effect has meant mounting costs in government operations.

Holes in the City Pattern

People who heeded the call to live in the outlying districts had to be assured of practically all the conveniences they enjoyed in the central areas. Water, gas, electric light, paved highways, telephone, street lighting, fire protection, and still other services, had to be established. But these services extend across holes in the city pattern where there is practically no population to share in their use and hence no source of income to pay the cost of the extensions and their maintenance. The necessary taxation to support these utilities, except those under private ownership, must be distributed over the entire urban population. The outlying group does not pay the whole bill. There must be sufficient tax returns not only to pay the interest upon bonds issued to defray immediate utility construction costs, but also to pay the principal eventually, and to pay for the increased personnel necessary to maintain and operate the services.

The burden upon all the people due to the physical expansion of the community must continue in effect until the intervening spaces are settled and the unit costs of government services are proportionally distributed. If, therefore, we wish to bring about a lowering of taxes, we must cease urging people to move their abodes beyond the present city limits, cease annexing these extensive unoccupied territories, and, instead, concentrate our energies upon filling up the holes in the pattern.

In Europe, as in the United States, an "Own Your Home" movement got under way after the war. In some German and Scandinavian centers it gained a fair degree of momentum. However, both the limited purchasing power of the mass of people, and the succession of economic reverses, greatly slowed up the movement and in certain instances practically terminated it. In its stead there has been a reversion to apartment life, with, however, a notable improvement over pre-war times in the livability of the apartments with respect to light, air, roominess and cost of maintenance. There has been much socialization of living quarters. Whether for good or for evil, the outstanding fact remains that the physical expansion of these cities has not been permitted to continue. European city areas generally tend to be restricted.

Aside from a tottering hope that superfluous government jobs and other media for excessive expenditures may be eliminated by city fathers throughout the country, we shall be disappointed if we anticipate lowered taxes in the next few years. The suburban boomerang, a fundamentally extravagant concept, has returned to its starting point with the energy with which it was initiated, and until time alone enables us to catch up, as it were, to the unwise physical expansion of our urban centers, we must continue to pay the bill for our enthusiastic following of over-zealous "Own Your Home" advocates.

Neighborhood Units

One suggestion for solving the problem of occupancy of the holes in the city pattern calls for the planned construction of neighborhood units under the jurisdiction of the municipality. Present congestion in certain portions of the cities could thereby be relieved without territorial expansion, and by the same stroke living conditions for large numbers of the population could be vastly improved. The cost of such a project could be met by the issuance of municipal bonds to be retired by returns from the investment, or by limited-dividend corporations operating under state laws and with the aid, perhaps, of funds available from the Public Works Administration. By either of these methods no increase in taxation would occur.

A Progressive Public Works Department

Costs Reduced Through Laboratory Analyses of Materials and Methods

THE first year after the Public Works Department of Muskegon, Mich., set up its laboratory, it effected a considerable saving in its paving costs under contracts awarded. The laboratory cost $4,500 to equip even modestly, but by city control of the tests, and with the city furnishing acceptable materials to the contractors, and designing the mix on a strength basis, there was a saving in cement, and the total saving on 60,000 yards of pavement amounted to $12,000. The whole aim of the Department has been to improve the quality of the pavements and lower the costs.

In order that the men in the Department might know what the various activities had to do with producing an economical and satisfactory pavement, a concrete school was established through the cooperation of the University of Michigan and the Portland Cement Association. Every man learned that the theories of concrete were important, and saw why certain things were insisted on in the field operations. Trips were made to nearby cement plants to study the process of manufacture, so that the men were more familiar with the material they were using. This has resulted in a corps of engineers who are practical and know the theories associated with their work. The Department has had a number of local young men who have worked for it during the summer and then continued their engineering work at some university during the remainder of the year. These men have invariably been above the average, and some of them honor students, showing the great value of combining practical and theoretical training.

Experimental work in the laboratory has resulted also in the use of a local stone waste with lake sand to produce a satisfactory concrete. Another line of study, again of local materials, has produced a concrete of 10 pounds greater weight per cubic foot than the average for the materials generally used locally, from pea gravel and crushed stone, using four sizes of aggregate. Similar improvements in the asphalt paving have been effected through the efforts of the Public Works Laboratory. This work has created a feeling of confidence in the Department of Public Works on the part of contractors, the public utilities, and the taxpayers.

Much Day Labor Construction

There have been many paving projects completed in Muskegon by the use of day labor, particularly during the last few years, when welfare work was abundant. This present year has been rather below the average because of the almost complete lack of funds.

On one relief project completed a year ago, a 9-7-9-inch pavement 30 feet wide, of concrete that tested 3,500 pounds per square inch, was laid for $3.00 per front foot of abutting property, which was the price assessed to the property. This work included the grading of all terraces, the sod being saved and re-used where possible, and other places seeded. The city paid for the intersections. The price quoted paid for all materials, including the intersections, and paid part of the cost of the labor, the remainder being that portion contributed by the welfare department. The gravel prices for this job were exceptionally low, which helped the prices. All the concrete was mixed by hand, and the work included the removal of a considerable footage of abandoned street-railway track.

As a means of stimulating the labor to real effort, a day's work was set up, and if it was completed before the regular hours, then the crew was through anyway and was paid the full time. The unit day was considered 60 feet of slab 9-7-9 inches thick and 15 feet wide for one 6-hour crew. Two crews were used per day with the same tools; thus a saving was effected in that expense. The crews usually completed the allotted work in 5½ hours. This method automatically took care of the slackers, for the workers themselves took things in hand if any one seemed to be lagging. On this particular job the Department was fortunate in having a fine pair of hand finishers, and the resulting pavement was very creditable. In pouring the slab, an extra crown of ⅜-inch was allowed in 15 feet to take care of the entrained air released in finishing. All the concrete was designed using a water-cement ratio.

Street Maintenance

There are 152.73 miles of streets in Muskegon, of which 71.23 miles are paved. The detail figures are:

Concrete	38.00 miles
Bituminous	27.15 miles
Brick	3.51 miles
Wood block	1.60 miles
Paved alleys	0.97 miles
Unpaved streets	82.47 miles

City forces repair all utility cuts and bill the costs to the utility. In the case of large cuts where the costs are high, the city renders an estimate in advance, and that is binding on the city.

For patching, a pre-mixed bituminous material known as Crown Rock, from Indiana, has been used, shipped in carload lots as needed, and has been stored successfully in bins. When local contractors have been operating their hot-mix asphalt plants, some material of this type has been purchased for patching. All materials for repairs are carried in a truck, whether the cold or hot patch material. A roller is used for the large patches, and all small patches are hand-tamped thoroughly. Most holes are cut out with vertical sides, painted with asphaltic material and then filled. In some cases the material is feathered, but under these conditions the hole is usually heated by pouring on some gasoline and firing it; then the new material bonds with the old, similarly to the effect produced by the large surface heating machines. The patching crew includes from six to eight men, as follows: one man to paint the hole; one man tamping; two rakers; and two or more laborers cutting the holes and handling the material.

The Public Works Department in Muskegon, Mich., is in charge of H. J. Lewis, Director, with W. C. Brown as Superintendent of Streets.

Change in Hog-Feeding Policy at Flint

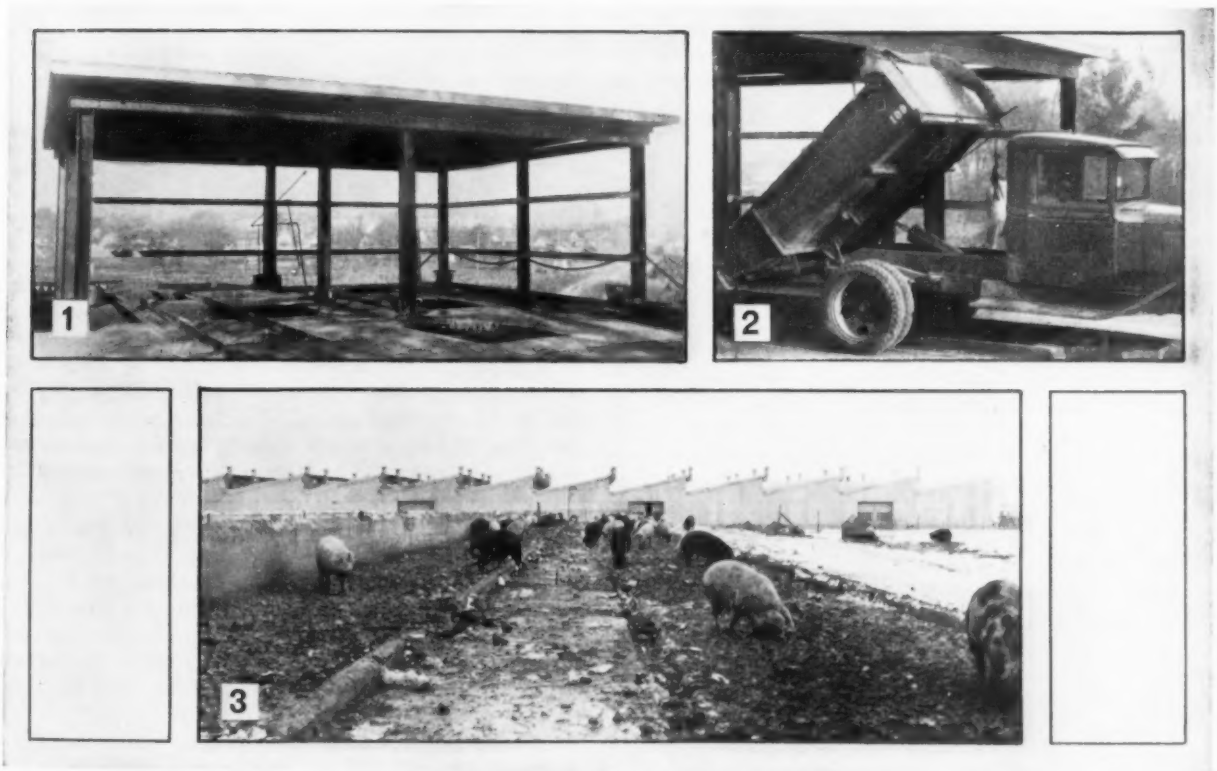
Michigan Garbage Now Fed to Michigan Hogs

FOR many years Flint, Mich., has been a leader in the disposal of garbage by feeding to hogs. They have thrived and have proved a paying investment as long as the price of pork stayed up on the market. There has been a bad drop in those prices as with most other commodities in the last three or four years, but the turn in the tide seems to have arrived and it is expected that the income from the sale of hogs from the municipal hog farm will increase considerably. Prior to last January it was the policy of the city to buy its hogs on the St. Paul, Minn., market, for it was believed that hogs from that market stood a better chance of producing large, healthy hogs when fed on Flint garbage.

Beginning with the new year, the system was changed by making purchases locally and on the Detroit market. The prices were lower by comparison with the prices on the St. Paul market at the same time, and the freight rates were lower than from the more distant market. The stock first bought on the Detroit market weighed on an average of 120 pounds each, and when fed on the local garbage under sanitary conditions they gained weight rapidly, so that at the end of 120 days they weighed an average of 245 pounds when weighed at the Detroit market where they were sold.

The death rate of the new lot of hogs was cut 50 per cent as compared with the St. Paul rate. The reason for this is probably that the St. Paul hogs were on the road from 36 to 48 hours before they were unloaded and they were rather sick-looking. The hogs bought in Detroit are on the road only three or four hours after inoculation for hog cholera. They are placed in quarantine for three weeks, during which they are fed on a mixed ration of oats and garbage. After this they are placed on the straight garbage ration for the remainder of their stay at the hog farm. The city has enough land at the hog farm to be able to raise all the oats as well as corn needed for feeding and fattening the hogs for the first and last periods of their stay at the farm.

It had always been considered that Michigan hogs would not eat Michigan garbage, and that thought had guided the men in charge of the hog farm throughout its development. Considerable thought was given to the cost of the hogs as bought in St. Paul, which was found on a basis of price alone to be about ½-cent a pound higher over a



HANDLING GARBAGE COLLECTION AND DISPOSAL AT FLINT

1. The upper floor level of the transfer station from which the collection trucks dump the garbage directly into trailers for hauling to the form. 2. One of the 1½-ton Chevrolet collection trucks with a 3-yard body dumping. Note that the sloping end has been cut off and that the tailgate is kept in locked position while raising the body. This brings the center of gravity of the load in front of the rear axle instead of behind it as was the case with the old type used. 3. Hogs at the farm feeding on the concrete floor of the sleeping barn that was destroyed by fire on September 22, 1933. In the background is the sheet metal feeding barn, built in 1927, measuring 100 feet wide by 300 feet long. This barn has a concrete floor and approximately one-half the inside space has been converted into winter quarters for the hogs

period of years. The benefit of a much lower death rate will be reflected in a lower investment in hogs, which will increase the profits from the hog farm.

Collection Methods

Garbage is collected by city-owned trucks twice a week in summer, and from hotels and restaurants daily the year around. There are two collectors for each truck, and both are able to drive the truck, so that they can change around and speed up collection. The collection fleet consists of ten to twelve 1½-ton Chevrolet trucks with 3-yard Wood bodies and hydraulic hoists. The two collectors enter each property and collect the garbage from the householder's can by dumping into the 1½-bushel galvanized iron baskets which the collectors carry. As soon as the basket is filled from several garbage containers, it is emptied into the truck.

The collection trucks as soon as filled proceed to the central loading station, where they dump direct into the trailers. The trailer fleet consists of a total of 13 trailers, divided between Highway, Lee and Fruehauf types. The trains for hauling the garbage to the hog farm consist of two trailers and a truck, loaded with garbage, for hauling them.

The collection and disposal of garbage in Flint, Mich., is in charge of James R. Pollock, Director of Public Works and Utilities.

Inexpensive, Dustless Hard-Surface Highway Construction

The Federal Government, State Highway Departments and Research Groups Produce Satisfactory Tertiary Roads from Natural Soil

THE most satisfactory low-cost secondary roads of the future will probably be built of natural soil such as sands, clays, gravels, and other stone materials and treated with calcium chloride. These will be balanced according to the best scientific practices that can be devised. Some practical road superintendents and engineers have already developed a background of experience which has enabled them to combine soils such as sand and clay to the best advantage for road work. In general they have had to develop their own procedures very slowly and laboriously, using the rule-of-thumb methods which seemed best suited to meet the particular problems which they have encountered.

During the last two years marked progress has been made among engineers in reaching a clearer understanding of the principles underlying soil behavior. Credit for these advances is due largely to the work of the U. S. Bureau of Public Roads and many state highway departments. As a consequence, it is now possible to adjust soil properties with reasonable ease and accuracy, using the natural materials that are usually available in any given section.

The principles of soil behavior are now finding their greatest application in the improvement of gravel wearing surfaces. In the past, many engineers have been concerned more about the shape, hardness and proportion of the stones composing their gravel, than they have about the properties of the binder soils. It is now generally recognized that the correct balance between sand and clay in a gravel binder is a factor of first importance for improving the resistance of this type of wearing surface to the action of traffic, and in reducing the cost of its maintenance.

Further improvement of the clay-bound or stabilized gravel road surface results from its treatment with calcium chloride. This substance holds moisture in the surface, which supplements the binding or cementing action of the clay. The combination of moisture and binder soil holds the stones or pebbles securely, thus providing a firm, hard, dustless road surface. The moisture-holding material is essential for preventing the loss of the valuable binding constituents.

Reducing Gravel Replacement by the Use of Correct Binder Soils

Because the stones are firmly held in place when the correct binder soils are mixed with them, the usual wear of traffic on gravel particles is greatly reduced. Ordinarily, a large part of this destruction is caused by abrasion of the stones or pebbles against each other, with subsequent loss of the resulting fine material from the surface. Thus the most important single item in gravel road maintenance, namely, gravel replacement, is greatly reduced by this treatment.

A second item of expense that is decreased when gravel roads are prepared in this manner is that of blade or grader maintenance. On many gravel surfaces this operation is performed daily. Blading is required only after rains on gravel roads which are bound with clay and calcium chloride. In fact, test projects under observation, which carry about 1,000 vehicles per day, have remained smooth without blading for two- or three-week periods, permitting longer maintenance sections with equal effectiveness.

This type of surface, when adapted to suit local conditions, should meet the need for a low-cost road that will yield high-quality service. In addition to a minimum initial outlay, it requires little blading, and the quantity of annual replacement material is small.

Street Maintenance Programs for 1934

IT is most encouraging to find that after a period of several lean years in the maintenance and reconstruction of city streets, which has left hundreds of miles of important business streets and thousands of miles of residential streets in exceedingly poor condition, cities are awakening to the need for immediate repairs in order that the initial investment in both surface and foundation may not be entirely lost.

THE AMERICAN CITY is conducting a survey of the work which is being undertaken by cities in different parts of the country, and during the next few months will publish abstracts of the programs reported.

Aberdeen, Wash.

The budget allowance of Aberdeen will permit only the absolutely necessary small repairs in streets. During the next three months, however, the city will do a large amount of work on the streets with CWA and welfare labor. This work consists of clearing streets and sidewalks of brush, grass and debris and opening up drainage ditches, as well as reconstructing plank walks, building dikes and new drainage ditches. About 70 men are employed on this work, and this number will shortly be increased to 100.—S. C. WATKINS, City Engineer.

Charlotte, N. C.

It is proposed to grade, drain and surface several miles of new streets in Charlotte during the next six months, to build several new bridges, and to put top soil and sand on all dirt streets and sidewalks; cost, about $500,000. These are CWA projects.—WAYT THOMAS, City Engineer.

Crawfordsville, Ind.

The sum of $40,000 has been appropriated by Crawfordsville for materials to carry on a street paving, grading and widening program for the first six months of 1934. It is planned to employ about 160 men on this work as a welfare project.—L. B. CLORE, City Engineer.

Grafton, W. Va.

About $1,000 will be spent on general street maintenance in the first six months of 1934.—J. EDWARDS, JR., City Engineer.

Laredo, Texas

The city of Laredo is carrying on its regular maintenance work on the streets and will probably spend between $25,000 and $30,000 in wages and materials. Welfare laborers are used where possible, but, owing to the large amount of delinquent taxes, it is impossible to find money for materials and tools needed to start new work.—FRANK C. HEINS, City Engineer.

Martinsville, Va.

The city of Martinsville has applied to the PWA for a loan of $140,000 to be used on street improvements. The program calls for the construction of about 70,000 linear feet of curb and gutter and drainage structures and also about 88,000 square yards of surface treatment on a soil or gravel base.—B. S. PARRISH, Superintendent, Department of Public Works.

Middletown, N. Y.

During the winter the street maintenance program of Middletown is at a minimum, but in the spring the regular program will be started again. The only street maintenance connected with welfare work is snow removal, and all the extra men used are furnished from the welfare list.—JUSTIN F. GATES, City Engineer.

Mobile, Ala.

About $20,000 will be expended in the necessary maintenance of about 100 miles of paved streets in Mobile. This is done by the regular city forces with no welfare labor used.—HARRY L. FISHER, City Engineer.

Morgantown, W. Va.

As part of its maintenance program for the first six months of 1934, Morgantown is to construct several miles of stone gutters along earth streets and will continue the regular maintenance of improved and earth streets, at a total cost of $7,500.—ELMER W. PRINCE, City Engineer.

Port Chester, N. Y.

The maintenance program of Port Chester does not regularly get under way until about May. For 1934 it is planned to replace about one mile of dirt road with 2-inch penetration macadam. About 15 miles of macadam will be sealed with oil and chips or oil and sand. The average cost of construction of the 2-inch penetration macadam with one application during the past season was 34 cents per square yard, and the average cost of surface treatment 6 cents per square yard. In addition to this road work, the city has done considerable patching, repairing of curbs, gutters, and sidewalks, and maintenance of sewers, drains, manholes and catch-basins.—FRANCIS I. MCGRATH, City Engineer.

Red Wing, Minn.

About $8,000 is to be expended by Red Wing on oiling and asphalting as a maintenance procedure in the first six months of 1934. Materials will be purchased for ten culverts measuring 15 to 36 inches diameter. A Civil Works program costing about $20,000 and involving hand ditching and grading is also planned.—JAMES F. ENZ, City Engineer.

Rye, N. Y.

While Rye's budget for 1934 will not be made up until March, 1934, it is anticipated that the sum of $4,148.50 will be expended on an asphalt macadam surface for Ellsworth Street early in the spring. Plans are also under way for some welfare work to be done in conjunction with the county.—JOHN A. EHLER, Village Engineer.

Watertown, Wis.

It is planned to oil a portion of the gravel and earth roads in Watertown, and also to do considerable cold patching and some minor maintenance. No program of any size is anticipated at this time. The tentative budget contains an item of $12,000 for maintenance outside of the $3,000 for road oil.—P. L. SCHROEDER, City Engineer.

Wellsville, N. Y.

The regular routine maintenance program of Wellsville is to be continued, involving the expenditure of about $4,000. The expenditure of $25,000 has been authorized for vitrified tile pipe for a drainage project as a relief measure, the labor to be paid for by the Federal Government under the CWA if the project is approved.—E. J. ROWE, City Engineer.

Wisconsin Rapids, Wis.

Only the regular street work, including grading and oiling, is to be done during the first part of 1934, and no new work is contemplated.—C. P. GROSS, City Engineer.

(To be continued in the February issue)

Operating a Mechanical and Air-Blowing Activated Sludge Plant

Interesting Experiences with a Converted Dortmund Tank Plant Receiving Refrigerator and Tannery Wastes

By THEODORE REED KENDALL
Engineering Editor, The American City

MUSKEGON HEIGHTS, MICH., has what is probably the first working size activated sludge plant that combines mechanical and air-blowing aeration. It is a community of 11,000 contributing population and has the Norge refrigerator plant and a large tannery, which contribute trade wastes to the plant. When the tannery was first started, the old Dortmund tanks were still in operation and the plant was badly overloaded. At times the Dortmund tank influent had 500 cc solids, and the effluent 900 cc. And the sand filters receiving the tank effluent piled up as much as 5 inches of sludge in a single day. This overload of tannery waste has been greatly reduced by having the flow go to an old plant where most of the solids are deposited and the sludge drained to drying beds and the effluent sent to the new plant.

The city has separate sewers, with the storm sewers flowing directly to the creek which flows into Mona Lake. The night flow is at the rate of 400,000 gpd, and the maximum day flow at the rate of 1,120,000 gpd. The trunk sewer leading to the plant is a 24-inch vitrified clay line. There is one underground pumping station in the city and it is equipped with a Fairbanks-Morse centrifugal trash pump automatically started by a sump float. It operates about five times a day for 20-minute periods.

This new plant is rebuilt from the old Dortmund plant, which included the tanks, a contact filter and sand filters. With changes to activated sludge, many of the features of the old plant are used, because they do improve the character of the effluent, although they are not entirely necessary to the satisfactory operation of the plant.

The Automatically Cleaned Screens

The sewage enters the plant through a Dorr automatically cleaned coarse screen in which the differential in head caused by the accumulation of screenings on the bars operates a direct switch that lifts the rake and cleans the screen. The screen is located in a brick house, thus confining the odors which are the worst part of any sewage treatment plant. The screenings are disposed of by burying.

The Grit Chambers

A pair of grit chambers make up the next unit in the plant. One grit chamber is used at a time, and even that is too large to give the standard flow of one foot per second to permit the deposition of grit and the carriage of the organic matter along with the flow. There is a considerable accumulation of organic matter in the grit chamber. When the chamber is drained for cleaning, the deposit is carefully hosed to wash out the organic matter and leave the grit. This is to be corrected, when funds are available, by narrowing the channel with a brick lining to increase the velocity of the flow. The grit is removed to the grit drying beds for disposal.

A Bristol recording gage operating from a proportional weir at the effluent end of the grit chambers shows the total flow entering the plant. It indicates very clearly the time when each cleaning of the Dorr screen occurs, by an increase in flow for a few minutes.

The Primary Settling Tanks and the Aerating Tanks

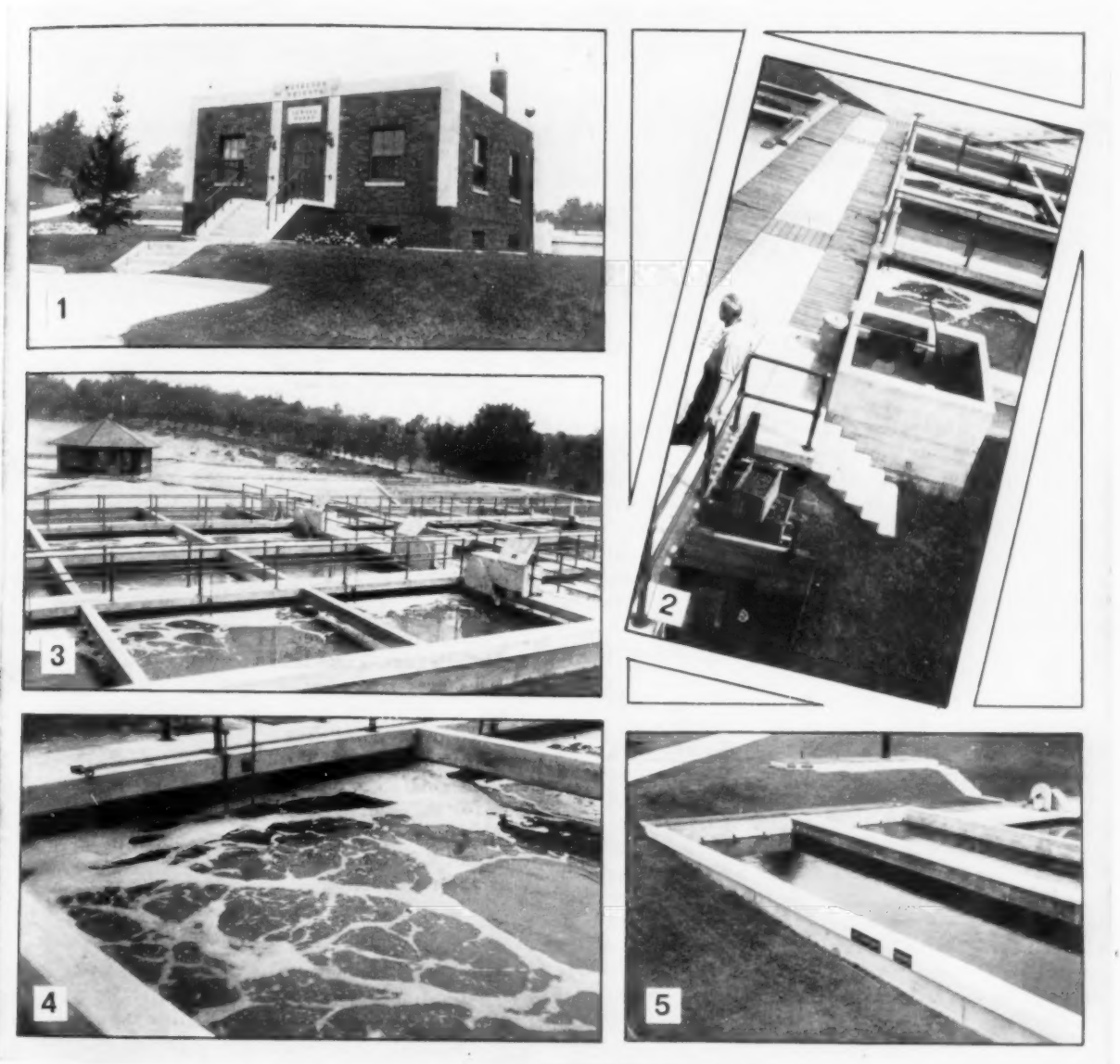
One interesting feature of the plant from the standpoint of the visitor, whether he be an interested citizen looking over one of the city utilities, or a technical man there to learn something about the plant, is the distinct labeling of every part of the plant with its name painted on the concrete, where it is readily visible.

At the entrance channel to the primary settling tanks a 2-inch pipe delivers the excess activated sludge, amounting to about 15,000 gallons per 24 hours. There are two primary settling tanks which are used alternately, since the flow is not sufficient to require both. The tanks are 60 feet long and carry 10 feet 6 inches of sewage with about 18 inches freeboard. The flowing-through period is about two hours. A Link-Belt sludge conveyor and skimmer is installed in each primary tank, but the tank is not equipped with an apron for the removal of the scum, so that it is necessary to skim it by hand. This is not satisfactory, for it causes the scum to start back across the tank. It is planned to install a metal shelf onto which the scum will be deposited, as soon as money can be secured for improvements.

The sewage is septic upon arrival at the plant and, in fact, has foamed badly in the sewer, at times coming up through manholes. The deposit of sludge in the primary tank shows septic with a considerable showing of bubbles. This has been improved somewhat by the waste from the Norge factory, which has raised the pH from 6 to 7.5, showing that there can be some blessings from trade wastes.

The aerating tanks are four in number, and all are used

at all times. The sewage flows back and forth from one tank to the next, each tank being 91 feet long and 11 feet deep to the water line. It requires about 11 hours for the sewage to flow through the tanks. The main walks of the tanks are well protected by pipe rails, but there is still considerable danger from small children "daring" each other to walk the narrower walks when the operator is not around to prevent such stunts. A fall into the aerating tanks might prove fatal, for the Dorr paddles revolve through the sewage at 3.8 rpm, creating a forward current while the Filtros plates, which are set near the bottom on a slight berm, supply the air. It is customary to set the plates in the very bottom of the tank to prevent any possibility of septic action, but the paddles sweeping through the sewage close to the bottom prevent any accumulations. The paddles work against the flow as created by the upward flow of the air. They were operated in the opposite manner for a period, but the results were not satisfactory. With the paddles working against the flow of air, the air is kept within the sewage a longer period of time and thus is more effective in oxidizing the organic matter. The aeration tanks show a good brown activated sludge color almost immediately after aeration starts in the first tank.



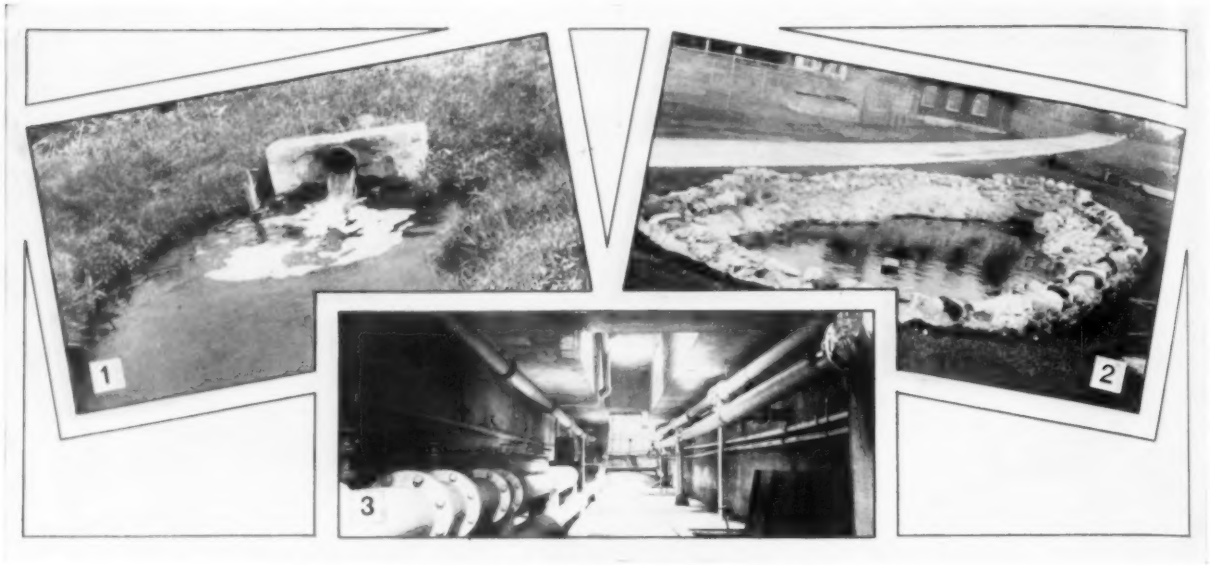
SCENES AT THE ACTIVATED SLUDGE TREATMENT PLANT, MUSKEGON HEIGHTS, MICH.

1. The office and laboratory building. 2. The top of the pipe gallery with the primary tanks at the upper left; some of the aeration tanks at the right, and the return sludge box in the foreground; photograph taken from the roof of the office building next the waste sludge gas burner. 3. A general view of the activated sludge tanks with the contact beds in the background and the sludge drying beds in the right background. 4. The "pattern" on No. 2 aeration tank. 5. The secondary settling tanks with the grit chamber or basin in the background. Note the method of identifying each tank or basin for the benefit of visitors and new employees

The returned sludge is applied to the aerating tank at the entrance of the sewage to the tank.

Secondary Tanks

A pair of secondary settling tanks are located adjacent and parallel to the primary settling tanks and are equipped



DETAILS OF THE MUSKEGON HEIGHTS PLANT
1. The outfall sewer. 2. The fish pond, fed constantly with secondary tank effluent. 3. The pipe gallery between the double line of settling and aerating tanks, with natural lighting

with Link-Belt sludge conveyors. These tanks are each 68 feet long and have a water depth of 11 feet 6 inches. The theoretical flowing-through period is 5 hours, but tests have shown an actual period of ½-hour. This was partially corrected by the removal of the baffle at the effluent end of the tank, which permitted a more uniform flow through all the effluent ports. It is planned to still further improve this condition by installing a U-shaped effluent trough or weir, so that the sewage will have to flow out over a very long weir, which will prevent short-circuiting.

A 2-inch line from the secondary settling tanks permits a small flow of the clear effluent to a fish-pond, where several goldfish and perch are kept. The fish-pond is an attractive rock pool with crushed stone in the bottom and a small waterfall at the entrance. There is also a cascade near the fish-pond where a thin sheet of water runs down a series of steps. The edge of the fish-pond is planted with flowers. The lawns of the plant are the envy of any one who has tried to grow grass where there is a deficiency of humus. They are watered regularly with returned activated sludge. The soil is sandy and hence gives a fine root growth but is low in organic content, which is adequately supplied by the activated sludge in liquid form.

Rock Contact Beds

A part of the old plant that is used as an adjunct to the new is the six beds of contact filters of a total area of 0.4-acre and 6 feet deep. The sections of the bed are dosed in rotation by a Pacific Flush Tank siphon system. When the new plant was first placed in operation, the effluent from the contact beds was worse than the influent, but it soon cleared up and since that time has aided the treatment of the sewage. All through the plant when first placed in operation, the effluent with the activated treatment seemed so much better than the residual matter in the various parts of the plant that it acted as a cleaning agent until the entire plant was stabilized. In the effluent from the contact beds now the suspended solids are less and the B.O.D. is less. The contact beds seem to equalize any irregularity in the secondary tanks, smoothing the trouble out until it is taken care of at the proper place.

It requires about one hour to fill a section of the contact bed, and the dissolved oxygen is increased about 1.5 ppm.

The Sand Filters

The effluent from the contact beds flows to the sand filters, of which there are six, totaling 3.5 acres. The beds are used in rotation, one bed being flooded each day. The underdrains are 3 feet below the top of the sand. These beds behaved much like the contact beds and gave an effluent worse than the influent when the plant was first changed over. Now they operate very satisfactorily and greatly improve the final effluent. They discharge through a 10-inch outfall into Black Creek. The distributing channels for the sand filters are wood conduits with square holes, about 4 inches on a side, cut at intervals on both sides about 3 feet apart. The channels are about 70 feet long and reach almost to the center of the beds.

Handling the Sludge

Even in the best-operated plant the final and most difficult problem is the disposal of the sludge. The sludge pumps are located in the basement of the office and laboratory building. The pump for primary sludge is run eight times a day for ½-hour periods and delivers about 9,000 gallons of sludge daily to the digester. The Dorr digester furnishes sufficient gas to operate the gas heater in the basement of the office building and supplies hot water to three coils within the digester, which is maintained at a temperature of 92 degrees. The digester is 40 feet in diameter and 18 feet deep.

About twice a month sludge is run out of the digester by gravity to the sludge storage tank, which is 31 feet deep and 31 feet in diameter. This permits the storage of sludge during the winter, when it would not dry on the beds. The supernatant liquor from the digester is run to the grit bed, but it is expected that a connection will be made to the incoming sewer so that this highly putrescible

liquid may be properly treated. It contains as high as 1.4 per cent solids. The supernatant liquor from the sludge storage tank is run to the primary tank for disposal. The final sludge from both tanks analyzes about 50 per cent ash.

There are five sludge drying beds, each measuring 90 x 32 feet. They are underdrained at a depth of 10 inches and have concrete runways for the convenience of trucks that are loaded with the sludge. The sludge sells locally for 50 cents a yard, and all that is produced is taken away at this price.

The Office Building

The office building, a brick structure 24 feet square, houses the office and laboratory, and in the basement the sludge pumps and compressors. In the office is located a venturi meter which indicates the amount of air used in the plant. The use of the mechanical stirring or paddles greatly reduced the power required for activation of the sewage over the use of air alone, as has been indicated by tests. In spite of the fact that the sprockets and chains wear badly in the sewage and have to be replaced every ten months, there is still a large saving.

In the lobby of the office building are the switchboard and the Dorrco-Barnes sludge pump for the primary sludge to the digester. The small well-equipped laboratory is located on the same floor, with a lavatory close by.

In the basement is a sample rack for the stability tests on the effluents of the sand filter, rock filter, secondary settling tank and activated sludge tanks. The rack is marked from 1 to 30 for a series of samples, and one is removed each day to show the length of the stability of the particular effluent.

The pump equipment in the basement includes an auxiliary pump which can pump from any tank to any other tank. This is a Fairbanks-Morse 4-inch centrifugal. Another of the same size and make is used for the return sludge to the aeration tank, and the excess sludge to the primary settling tank. There are two blowers to furnish the air for aeration. The smaller blower is a 228-cubic-foot per minute Roots-Connersville-Wilbraham unit belt driven by an Allis-Chalmers motor. The larger, also a R-C-W rotary blower, is a 356-cubic-foot-per-minute unit driven by an Allis-Chalmers motor through a Texrope. The larger blower is used when the flow is heavy, and all day Mondays.

An American Radiator Co. coal burner is installed as a standby heater, and a Bryant tubular gas boiler burning the gas from the digester is used for heating the water for the digester. There is no scrubber in the line, so that it is necessary to clean out the boiler every four months. A Yeomans 1½-inch centrifugal hot water circulating pump keeps the water to the digester moving constantly.

A naturally lighted pipe gallery runs from the basement of the office building out between the aeration and primary and secondary tanks. All pipes are labeled, as well as the tanks, so that there is no doubt of the purpose of any line or valve. A second sample board for stability tests is located in the gallery, since it is cool in summer and gives more uniform results. An 18-inch tile line runs from the end of this gallery to the digester, carrying the hot water and return lines. The pipes in the gallery have all possible combinations of valves for unwatering and by-passing any tanks.

Gas not burned in the boiler is carried to the top of the building and burned in a waste gas burner to prevent any odor from the gas in the valley in which the plant is located.

The superintendent and one helper operate the plant, working a total of ten hours each. This is probably the only activated sludge plant in the country that operates for nine hours in the twenty-four with no attendants. It runs from 10 P.M. to 7 A.M. automatically.

A TYPICAL REPORT

MONTHLY OPERATING REPORT FOR MAY, 1933

Average sewage received per day		776,000 gallons
Average temperature		55 degrees
Settled solids, cc/liter		
Raw sewage		13
Settled sewage, primary tank		3.2
Power consumption		571 kw-hrs./day
Volume of air, million cubic feet /day		0.391
Relative stability, days to decolorize		
Sand filter		10 plus
Rock filter		10 plus
Secondary tanks		6
Aeration tanks		6
Per cent solids at bottom of digestion tank		3.7
pH of raw sludge, primary tank		7.2
pH of digester sludge, average sample		7.7
Raw sludge pumped to digester		9,050 gallons
Per cent solids in raw sludge		2.7
Activated sludge returned to aeration tanks		206,000 gallons
Excess activated sludge to primary tanks		9,000 gallons
Suspended solids	Volume	Weight
Aeration tank No. 2	510 cc/liter	1,300 ppm
Aeration tank No. 3	450 cc/liter	1,300 ppm
Aeration tank No. 4	430 cc/liter	1,300 ppm
Returned sludge	970 cc/liter	4,600 ppm
B. O. D. 5 days		
Raw sewage		282 ppm
Settled sewage		191 ppm
Secondary tanks		5.9 ppm
Rock filter		5.5 ppm
Sand filter		2.7 ppm
Dissolved oxygen		
Aeration tank No. 4		4.8 ppm
Secondary tank		4.2 ppm
Upstream tank		7.7 ppm
Downstream of plant		7.4 ppm
Gas production		12,000 cubic feet

For testing the B.O.D. for the rock filter, sand filter and secondary tanks 100 per cent samples are used, and dilution samples are also run.

The Muskegon Heights sewage works, Muskegon Heights, Mich., are operated under the direct supervision of R. A. Anderson, Superintendent.

Continued Broadcasts on "The Crisis in Municipal Finance"

JANUARY 9.—MODERNIZING THE MECHANISM OF LOCAL FINANCE

Mayor Joseph F. Loehr, Yonkers, N. Y.
William P. Capes, Executive Secretary, New York Conference of Mayors and other Municipal Officials
Prof. Thomas H. Reed, University of Michigan

JANUARY 16.—REGENERATING LOCAL CIVIL SERVICE

Charles P. Messick, Chief Examiner and Secretary Civil Service Commission, New Jersey
H. Eliot Kaplan, Secretary, National Civil Service Reform League
Prof. William E. Mosher, Director, School of Citizenship and Public Affairs, Syracuse University

JANUARY 23.—RENOVATING LOCAL ADMINISTRATION

Lavinia Engle, Chairman, Civil Service Reform Committee, Maryland House of Delegates
Prof. A. R. Hatton, Northwestern University

JANUARY 30.—THE BANKS AND BETTER MUNICIPAL CREDIT

O. C. Lester, Vice-President, Bowery Savings Bank, New York.
George V. McLaughlin, President, Brooklyn Trust Co., Brooklyn, N. Y.
Luther Gulick, Director, Institute of Public Administration.

FEBRUARY 6.—THE INVESTOR AND SOUND LOCAL FINANCE

Dr. Louis I. Dublin, Vice-President, Metropolitan Life Insurance Company
Willard I. Hamilton, Vice-President, Prudential Insurance Company of America, and President New Jersey State Chamber of Commerce
Harold S. Buttenheim, Editor, THE AMERICAN CITY MAGAZINE

The complete printed program is obtainable from the National Advisory Council on Radio in Education, 60 East 42nd St., New York.

Large-Scale Regional Planning

The Unit: Watersheds or States?

By JACOB CRANE
Planning Consultant

THE welkin rings with voices advocating regional planning. At the same time the content of the idea varies so widely that almost any two advocates discussing regional planning will find one another's notions fairly incomprehensible.

Since planning requires collective agreement on a program set up mainly through agencies of government, the extent to which government is in a position to command the situation represents the extent to which planning can proceed at any given time. And we must acknowledge that thus far governmental intrusion into private affairs is rather generally felt to be an evil, to be endured only so far as seems unavoidable, and not farther. There are, of course, implications in the New Deal leading beyond this attitude, but for the time being government seeks to aid private enterprise and not to replace it. The NRA, the AAA, the PWA, all are devices through which uncorrelated private and local enterprise can cooperate effectively without abandoning its essential character as private and local enterprise.

Coordinating the Three Phases of Planning

In anticipating the administrative form which planning may now take to be most useful under present limitations, we find the economic phase of planning more urgently demanded than the other two main phases, the planning of social institutions and the planning of land use. However, as examples, no sooner do we probe into the tangible means for adjusting production to consumption, for increasing prices and purchasing power, or for establishing monetary and fiscal programs responsive to changing needs, than we find ourselves plunged headlong into the other two main horizons of planning. Any scheme for a balanced agricultural production drives us at once, willingly or unwillingly, into specific rural land-use planning. We cannot go far in discussing industrial economy in the broad sense, without attempting to understand the rationale of industrial localization and the prospects for a changing geographic distribution of industry and hence of population and of power and of all the physical facilities. And then we are at once carried into the problems of governmental reorganization, education, public health and social welfare services—the conscious planning and replanning of social institutions. For *practical* purposes, the three divisions of planning are so closely interwoven that they cannot be separately compartmented on this expedition. In Washington there is already urgent need for pulling together the elements of the three phases of planning under some at least tentative agenda and program, giving direction to all of them.

Now, it is obvious that economic planning can be done only on a national scale. Each state cannot have its own money system, nor its independent program for industrial production and agricultural production, except under national control or guidance. Likewise, although to a leser degree, any conscious program for the social institutions (government itself, education, etc.) requires consideration of the country-wide interrelations between states and between each state and the federal and national agencies. For our purposes here, a group of social institutions of the greatest significance is just now emerging, namely, the agencies for planning and for administering plans. These planning agencies, operating in their respective geographic areas and in their respective segments of the planning field, are clearly destined to demand some form of national integration for their own administrative programs.

Finally, and perhaps less commonly realized, physical planning, land planning, urban and rural planning, call it what you will, flounders desperately unless and until it is given the steadying guidance of national land planning. With rare exceptions, no single state or region can plan its distribution of industry without reference to the national scene. It must know what forces beyond its control are operative to send it new industry or to draw industry away from it or to disperse or centralize industry within its own borders. Its plan for the use of its rural lands, crops, pasture, forest, etc., gains its basic validity only when it is set into a generalized national land-use plan. And so it is with power, and with flood control, and irrigation and reclamation, and transport, and large-scale recreation.

Thus we find shape given to the regional planning mould by these two considerations: First, planning is still essentially an aid to private enterprise, and to local enterprise. It has by no means proven its case and is not yet in a position to assume full control. It can study and be-ponder whatever it likes, and prepare itself for the possible future; but through 1934 it will continue in the main as "advisory" and as "a means for cooperation." Regional planning, as in the Tennessee Valley, must expect to carry the retarding weight of this fact for a while. Second, we find that the structure of social-economic-physical planning will inevitably be built up on the central framework of nation-wide over-all design; which means over-all designing by federal and national agencies. The Tennessee Valley plan cannot advance much ahead of national planning, nor can any other large-scale regional plan.

It is equally evident that national planning, absorbed in national and inter-regional problems, is so far removed from the intricacies of specific local problems that it must work with and through and as the inter-state representative of local planning agencies. The detailed planning survey is a job for people in close touch with the territory, the survey of natural resources, their utilization and the distribution of the wealth derived from them, the survey of the history and present situation and trends in population, industry, etc. Perhaps most important, the social survey requires local or regional organization. Planning remains an academic and even pedantic process until we can take the social survey and, giving it its first big opportunity, use it for purposes of learning more of the real

needs and desires and attitudes of the people whose lives the planning will touch.

The Valid Basis for a Region

The question arises, then, what shall be the regional unit for the kind of planning we are discussing here? In answering that question, let us assume that the boundaries of our states will remain for a while as they are now drawn. If and when they are rearranged, the regional administration may have to be rearranged accordingly.

How does the large watershed serve as a regional unit for regional planning, the kind of unit the President set up in the case of the Tennessee Valley? It develops from certain preliminary studies that in the eastern part of the United States the major watersheds range from 5,000 square miles to 100,000 square miles in area; that every one, including the Tennessee Valley, cuts across natural physiographic regions and natural land-use regions; that nearly every one cuts across state boundaries, and that none includes even major portions of all the states it touches. Not one has validity as a region on the basis of historic, traditional or cultural cohesion. Not one coincides with the very real regional influence of metropolitan centers and commercial territories. Each one is a watershed, and only that, useful for designing water-power and navigation development, but in no other sense a region.

Further, regions outlined on any one of the alternative bases above indicated—physiographic, cultural, commercial—would, we find, differ critically from the regions outlined on any other basis. There is no single type of regional area satisfactory for the variety of problems to be dealt with. The region immediately around the large city is of course a useful unit for certain special urban problems, and in the same way city and county planning is useful; but the rural areas cannot be divided up among the cities for regional planning. Such a move now would throw a huge monkey-wrench into the machinery.

Emerging out of the consideration of various types of regional unit, the reality is that no single principle of geographic delimitation can be successfully applied. Instead, the backbone of regional planning is made up of the chain of administrative authority and of legislative authority. Since the all-important administrative and legislative chain is now firmly established between the federal, state, county, and municipal governments, we may conclude that, subject to modifications in this structure, any large-scale region other than the *state* or the group of *states*, is destined to be anomalous and ineffectual. Regional planning is a job for the states, individually, in association with one another, and in association with federal and national agencies.

The TVA Not an Effectual Planning Agency

One of the underlying difficulties with regional planning in the Tennessee Valley project arises from its anomalous position in the planning field. The TVA is in a position to perform certain construction and manufacturing functions, to plan its own program in the light of that program's influence upon the life of the territory, and within limits to develop techniques of regional survey and planning. But, by virtue of its situation and its mandatory task, it has no real association with the several states which the Tennessee Valley touches, no association with whole states in the sense that the Federal Department of Agriculture has long-standing collaborative association between a great many of its bureaus and all of the states, through the states' administrative, educational, and research agencies. By this fact the TVA is largely impotent to actually effectuate basic regional planning. Moreover, an agency set up as is the TVA, preoccupied with urgent and critical problems of manufacturing and selling electricity and fertilizer and in making demonstrations of their use—such an agency is in a real sense inhibited from thinking about and organizing for regional planning.

The TVA is probably a good type of agency for public power development. In the regional planning field it can and should avoid blunders by checking its own projects through methods of regional planning; and it can and should aid and abet the development of regional planning technique without necessarily assuming responsibility for making the planning effective. But it is not likely to prove a satisfactory type of agency to displace all others and take over the whole regional planning function. Nor is any similar authority, set up for power development in any major river valley, likely to prove successful for regional planning.

A Job for the States

Instead, we may foresee each state with its State Planning Board; groups of states associating through their planning boards to handle inter-state matters; and a set of planning agencies in Washington offering counsel and guidance and funds to the state planning projects.

This whole plan for planning plainly requires heading up at some one point. That point may be the National Planning Board now set up in the Federal Public Works Administration. The survey and the details of planning, however, would lie in the hands of the State Planning Boards. They will deal with one or more of the following segments of planning, eventually perhaps with all of them: land use; industrial localization; the utilization of natural resources; fiscal programming; governmental reorganizations and advance in the other social institutions; transport and communications; recreation; the public services. Their first attack may be the survey of the physical situation, the social survey to furnish clues to real needs and desires, the adjustment of the present emergency measures to the situation as the surveys find it, the use of available state and federal agencies to start planning and demonstration activities, and programming the further work. In contrast to such a board as the TVA, which builds and experiments and does regional planning only in direct relation to its construction and experimentation, the State Planning Board begins to build up planning as a part of the governmental administrative system. Regional groups of states, such as the Public Works Administration regions, are already receiving planning study and stimulation through regional committees. A goodly number of states have begun their planning work; some are well established in certain segments of planning. It appears that in all probability large-scale regional planning will, during the next year, take the form of planning by states and by groups of states; the states working in collaboration with federal agencies, and dealing with an increasingly large part of the whole field of social-economic-physical planning.

EDITORIAL NOTE.—The author of the foregoing article has been consultant on state planning for Illinois, and on the Iowa Conservation Plan, from July to November, 1933; Regional Planner on the staff of the TVA; President of the American City Planning Institute; advisor on planning work in Canton, China, and for the Russian Government.

Day Labor in Covington, Kentucky, Built Needed Water-Works Improvements

The City Has Added a New Main and a Well-Designed Meter House to Its Water System

AFTER asking for R.F.C. money and waiting what seemed a sufficient length of time for the loan, the city of Covington decided that it could and would finance the needed improvements through a loan secured from a private organization. This was done early in November, 1932, and on the seventh of that month the Department of Public Property was ordered to proceed with the construction of a new main to the city from the reservoirs, a new meter house, and such other work as could be financed by the money available. Although it was not expected that the instructions to start the work could come so quickly, the Water Department had men on the job the very next morning with hand shovels and picks to dig the first trenches. This work was not undertaken primarily as a made-work project, but rather as a much-needed piece of work to protect the city from the possibility of a water shortage, or even a complete lack of water in case the existing line was damaged in any way.

The work involved the laying of 3,800 feet of 24-inch cast iron pipe, of which 75 feet was in tunnel, and the construction of a brick meter house to house the recording meters on the new and old lines to the city and the chlorinators and ammoniators. Of this, the most difficult work was the construction of 75 feet of new tunnel around the two existing pipes from the reservoir.

Outline of the Water System

The turbid water of the Ohio River is pumped to a coagulating house about a mile from the center of the city and at a considerable height, so that the remainder of the system is gravity. The water as received at the coagulation house is treated with lime and alum applied by two Gauntt dry feed chemical machines. The water then flows immediately to two Aer-O-Mix machines, where the chemicals and the water are thoroughly mixed and the undesirable gases in the river water are expelled. The aerating devices were not installed until a short time ago, and it was found that the cost of treating the water with chemicals was cut 30 per cent when they were used, because of the thorough mixing and the elimination of carbon dioxide and other soluble gases.

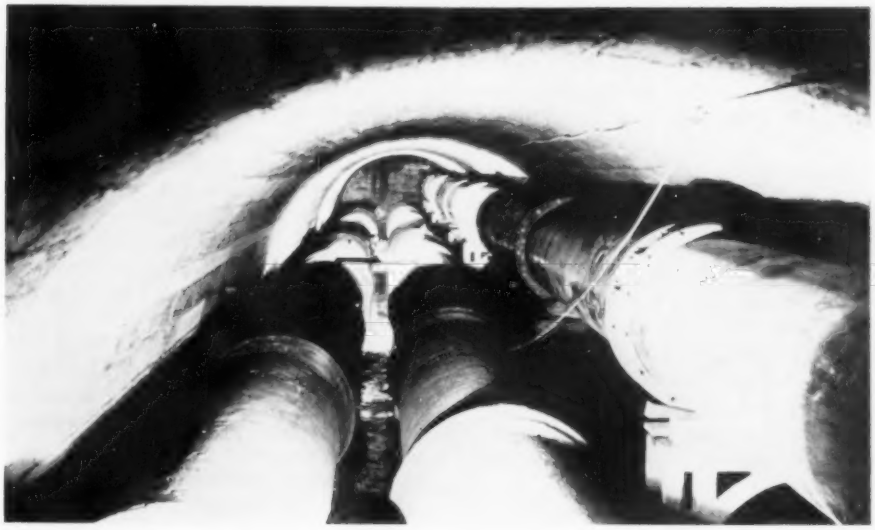
After aeration the water flows to one of the two upper reservoirs, known as the north and south reservoirs, which act as settling basins for the removal of the excessive turbidity of the river water. From these the water flows to the lower reservoir and thence to the meter house. The new construction not only gives an increased supply to the city through the new main, but also permits drawing water direct from the lower reservoir. If the lower reservoir is drained for cleaning, and water is taken direct from the upper reservoirs, the pressure is 10 pounds greater.

Although designs had been drawn up for the construction of a new meter house, a new connection to the reservoir and the new line to the city, there had been some question as to whether they would solve the problems existing. For this reason and also because the work was started so precipitately that no new planning was possible ahead of construction, the entire project was designed or re-designed as the work progressed. Also, the old work involved the use of a large number of special castings that could not be had in a hurry, and the re-design of the work made it possible to use the standard cast iron bends.

MAKING THE RESERVOIR CONNECTION

A total of 3,800 feet of 24-inch cast iron pipe was laid in trench dug by hand except where the depth of the trench was too great to permit hand work safely. The biggest cut for the pipe line was 30 feet deep and 44 feet at the new meter house. A great deal of the trench was in rock, and rock was blasted out to within 200 feet of the new tunnel at the reservoir. In laying the pipe up the creek bed, which offered the best line for the new pipe connection with the city, the pipe were spotted along the top of the bank and swung into place with a crane, a drop of 30 feet. The pipe were placed on a bench along the stream bed and put into the line by tripods. On this work the crew laid 420 feet of pipe a day, or 35 lengths, the best day's work being 39 lengths.

The problem of backfill was taken in hand by Mother Nature. Just as the line was completed, several moderate showers came in succession and washed a considerable amount of fine material down the stream and around the pipe, which now in most sections is completely covered by the action of subsequent rains.



THE NEW PIPE, AT THE RIGHT, ALONGSIDE THE OLDER LINES IN THE TUNNEL

This shows the section made up with Dresser couplings

The Tunnel

The last 75 feet of the new pipe line is in tunnel constructed around the two old lines from the upper reservoirs. They are 30- and 18-inch pipes, and the new pipe which was installed in the tunnel after completion is a 24-inch line, a continuation of the main to the city. The last 222 feet of the new pipe and through the tunnel was plain end made up with Dresser couplings, while the remainder was bell-and-spigot construction. Dresser couplings were used to permit placing the pipe in the tunnel after construction was complete and to permit the introduction of other units such as the two new Simplex meters.

The tunnel is an arch 15 feet wide and 12 feet high, horseshoe shaped, with the shell supported on a 1-foot, 8-inch footing. The shell is 12 inches thick at the base, gradually reducing to 10 inches at the top of the arch. This 75 feet of tunnel is an extension of an old 201-foot sandstone tunnel built in 1889. The new tunnel was poured with a 1:2:3½ ready-mixed concrete which was purchased locally at $7.50 a cubic yard. In pouring the new tunnel the concrete was chuted as far as 125 feet without any appreciable segregation. Early in February, 1933, the melting snow caused a slide on the right-hand side of the tunnel before the forms were in place. The earth slid in against the wood sheet piling and went on into the space where the old pipe were in place. One of

TWO SECTIONS OF NEW CONSTRUCTION AT THE COVINGTON WATER WORKS

1. The completed 24-inch cast iron pipe line in the creek. 2. The meter house before grading was started. The reservoir fence is seen in the background

the lines was pushed out about 4 inches. As it was believed that this condition was bad, a shovel or crane was rushed around the excavation to relieve the pressure, but before this could be accomplished the other side slid in and pushed the pipe back to within one inch of correct line. Nothing further has been done to straighten the line, for it has shown no signs of leaking at the lead joints.

Placing New Pipe in Tunnel

To get the new pipe into the tunnel, a track of 2 x 4's was built and a sled constructed to ride on the track. A timber was wedged into the tunnel at the far end, 200 feet away from the open end, and a block affixed to it. A steel cable was threaded through the block and brought out to a hoist engine, and the other end was attached to the sled loaded with a length of pipe. It took just ten minutes to pull in the first length of pipe to its position and put it up on timbers on the 30-inch line. The remaining lengths were pulled in eight minutes each.

The following week the lower reservoir was emptied and 46 feet of 60-inch Armco corrugated culvert pipe was jacked in from the reservoir to a concrete bulkhead in the old tunnel. This was broken through with a jackhammer, and then an air hose was run through the breach and a second hammer operated from the inside. For these operations the tunnel was wired for electric lights.

The Meter House

The new meter house which stands over the tunnel is of brick and stone trim and makes a very neat appearance. All the work described in this article was performed with day labor, but skilled labor was used, and not just the unemployment relief labor supplied by relief organizations. It was felt that the type of work was of too great importance to take a chance with unskilled, uninterested labor. The cleaning-up and grading and planting of grass and shrubbery is being done by unemployed labor.

The meter house is 22 feet square in plan and contains three rooms. The one at the entrance is the meter room, where the two recorders of the Simplex venturi meters are installed. These two meters are 30 x 14 1/16 and 24 x 14. In the long room at the left of the entrance are three Wallace & Tiernan vacuum type chlorinators, two of which are automatic and the other a manually controlled machine. The two automatic machines are connected each to one of the mains, and the manual type machine is connected to both mains and can be used when the other machines are down for cleaning. In the room behind the meter room are the two Wallace & Tiernan ammoniators.

The money for this project was obtained through the efforts of H. D. Palmore, City Manager, and the work was carried on under the supervision of J. T. Kingsley, Director of Public Property, and W. O. Billiter as Engineer.

How Many Municipal Electric Plants?

By **H. M. OLMSTED**

THE U. S. Bureau of the Census conducts at five-year intervals a census of electrical industries, which includes data on electric light and power plants, both municipally and privately owned. Preliminary figures of this census for 1932 have recently been issued by the Bureau. These show a total of 1,802 municipal electric light and power establishments in 1932, compared with 2,198 in 1927, a decrease of 18.0 per cent, and a total of 1,627 commercial (privately owned) establishments in 1932 compared with 2,137 in 1927, a decrease of 23.9 per cent. This represents a decrease of 20.9 per cent for all establishments, both municipal and commercial; but the output in kilowatt-hours increased 6.7 per cent from 1927 to 1932, and the total horsepower in generating plants increased 34.3 per cent. The latter increase was the resultant of a horsepower increase of 58.0 per cent for internal-combustion engines, 37.6 per cent for hydro-turbines, and 35.3 per cent for steam turbines, while the horsepower of reciprocating steam engines declined 34.8 per cent during the five-year period.

The commercial establishments, while fewer in number than municipal ones, continue to handle by far the larger amount of the total business, having in 1932 21,630,622 consumers, while the municipal systems had 2,227,749 consumers. The municipal systems sold 3,748,280,683 kwh during the year, this being 5.7 per cent of the total for all establishments. The average revenue per kwh was 3.1c in the case of the municipal systems and 2.7c for the commercial establishments. This has been made much of by certain newspapers. Even *The New York Times* placed the heading "Private Utilities Lowest in Rates," over a news column based upon the Census Bureau's figures. The comparison has very little meaning, because the private companies not only have the great bulk of the low-rate industrial power business, but also operate in most of the large cities, where rates even as to residential consumers are usually considerably lower than in the small communities, irrespective of utility ownership.

In the case of residential consumers the average rate per kwh was 5.6c with the commercial companies and 4.7c with the municipal systems, while small light and power consumers fare even better with the municipal systems, paying an average of 2.6c per kwh compared with 4.3c when served by commercial companies. In the case of wholesale power consumers the average rate paid to the private companies was 1.5c, while the municipal systems, which supplied only 1.4 per cent of the total kwh in this class, received an average of 1.7c. Current for street lighting, on the other hand, was furnished at 2.1c per kwh by municipal systems, and 4.7c by commercial establishments.

The above total of 1,802 municipal establishments is less than the number reported in the studies of the Institute for Economic Research. In the May issue of the *Journal of Land and Public Utility Economics*, Prof. Paul Jerome Raver gave a figure of 1,885 municipal establishments at December 31, 1932. The Institute's list of 903 municipal generating plants, as of December 31, 1932, prepared by Professor Raver, was reproduced in the 1933 Municipal Index. This number is increased to 905 by the revisions published in the *Journal* for November, 1933 (see page 71 of THE AMERICAN CITY for December), which also gave a list of municipal establishments purchasing their power supply. Part of the discrepancy between the figures of the Institute and of the Census Bureau comes from the fact that the Institute's list of municipal generating plants (as revised) shows 31 as generating for street lighting and other municipal purposes only, whereas the Census Bureau does not profess to include such plants. The Institute's lists have been prepared with exceptional care and checked from all available sources, and are probably as accurate as can be expected for such a difficult compilation.

The Status of Accounting in Street and Sanitation Departments

An Abstract of the Report of the Committee on Uniform Street and Sanitation Records to the American Society of Municipal Engineers

A TOTAL of 115 cities reported to the Committee on Uniform Street and Sanitation Records, and 90 of these reports contained information of value. Of these, 26 came from cities having a population over 100,000; 48 with a population of 25,000 to 100,000, and 16 from cities under 25,000 inhabitants. The report on Public Works Expenditures showed that many cities still do not maintain adequate general accounting records. The amount spent for street cleaning is, on the average for the reporting cities, about 75 per cent of the amount spent for refuse collection. The expenditures for refuse disposal are about 25 per cent of the expenditures for refuse collection.

Refuse Collection Costs Vary

Of the 89 cities reporting cost data on refuse collection, 13 cities contract for this work. Six of the 13 cities keep no records of quantities or costs of contract work. Separate collections are made of garbage in 40 of 63 cities. Ashes are collected separately by 22 cities, and rubbish by 5 cities. Ten cities collect garbage, rubbish and ashes all at the same time. In nearly all of the 63 cities, garbage is collected twice a week in the summer and once a week in the winter. Cities in the South have more frequent collection than northern cities. Set-out and set-back service, that is, the collection of the receptacle from the rear of the premises and its return, is furnished in only 5 of the 63 cities.

A rate of $1.24 was the lowest reported cost per ton for collecting garbage by city forces. This includes the four elements of expense, namely: labor; materials and supplies; equipment, including depreciation; and overhead. The highest cost per ton reported was $7.60. The labor rates in the city with the lowest cost were 20 cents an hour for collection, and 45 cents an hour in the city with the highest cost. These rates, however, do not explain all these differences. The ton costs of other cities were scattered between these two figures, with the average approximately $4.65. Many cities reported lower costs, but they were incomplete. For contract collection a low of $1.42 and a high of $4.49 per ton was reported. Many of the reporting cities did not include all elements of expense in their costs, and many ignored a major portion of the cost of operating the equipment. Twenty-seven cities did not include depreciation or overhead, and only 18 cities followed the correct method of using hourly rental rates including depreciation and shop overhead for charging of equipment to costs.

Practically all cities employed the ton unit in measuring the quantity of garbage. All garbage was weighed in 24 cities; test weights were made in 10 cities; and estimates in 14 cities; while in 13 cities no quantities whatever are recorded.

Different Methods of Refuse Disposal Employed

The reports on refuse disposal furnished some interesting information, although only 58 of the 115 reporting cities submitted information of any value. The cities reported their methods of disposal as follows:

Incineration	27
Dumping	25
Controlled tipping	4
Hog feeding	14
Reduction	2

Seven cities contract for disposal, of which only 3 could furnish information on the cost or tons of refuse.

In the 29 cities dumping refuse, 14 used private land, 8 used city land, and 7 both private and city land. The reported cost for dumping ranged from 4 cents per cubic yard to $2.00 per cubic yard. Only the figures from cities including all elements of expense are cited here. Most cities included only labor in the dumping costs.

Of the 27 cities incinerating refuse, 5 destroy both garbage and rubbish. In 7 cities the garbage is wrapped. The cost of incineration in cities, including all elements of expense, varies from 97 cents to $3.00 per ton. Fifteen of the 27 cities do not include depreciation. There is a crying need for a uniform method of compiling incineration plant costs.

Of the 14 cities reporting hog feeding, 5 compile no cost information whatever. The cost of disposal by hog farms, excluding depreciation, varies from 93 cents to $3.70 per ton. Lower costs were reported, but they were incomplete.

Street-Cleaning Reports Deficient

An endeavor was made to collect data on street and catch-basin cleaning but only 28 of the 115 cities reporting gave figures of value. Very few of these cities compile costs of each street-cleaning method, and most of the cost figures are incomplete. Machine methods for cleaning both streets and catch-basins show a very much lower cost than hand methods. Practically all cities employ the cleaning mile for measuring street cleaning, which is the standard unit of the Committee on Uniform Street and Sanitation Records. Only 2 cities continued to calculate the work in square yards, while 4 used the gutter mile, and 3 used blocks.

Proper Accounting Helpful in Facing Reduced Budgets

Many cities have curtailed their public works expenditures, and, in fact, the public works departments have been the target for the curtailment of municipal activities. The income of each city is primarily built upon the prop-

er maintenance of the physical structures of the city, and if the maintenance of these municipal structures is neglected, the real estate value of the structures abutting the public improvements is impaired. The effects of curtailing public works expenditures can be materially offset by a well-established control of these expenditures so that there is placed weekly and monthly before the executives of the city a record of the accomplishment of the public works department. This can be done through the operation of the system proposed by the Committee on Uniform Street and Sanitation Records. In fact, during the past year, the Committee has furnished standard report forms to many cities which wished to improve their records and cost of accounting methods.

Street Maintenance in Manitowoc, Wisconsin

82 Miles of Streets Kept in Good Condition and Clean

THE 82 miles of streets in Manitowoc, Wis., include but 10 miles that are not paved, the others falling into the following classifications: oiled gravel, 31.0 miles; brick, 4.2 miles; plain gravel, 9.2 miles; concrete, 27.0 miles; and asphalt, 0.6 miles. This reverses the more frequent condition in American cities, where asphalt paving predominates. In Manitowoc, the oiled gravel really should be classed as an asphalt paving, for the constant attention to this type of street improvement has created streets that to the casual observer are asphalt paved.

The oiled gravel streets are given a coat of oil each year, using a high-grade asphaltic road oil, which has built up a thick blanket that is maintained exactly like an asphalt pavement. Two Ford trucks start out in the spring of each year with a driver and a helper for each outfit, and patch every pot-hole as soon as it appears, using oil patches as well as Tarmac cold patch material mixed with the standard gravel of the community. The pot-holes are primed with oil, then filled with gravel, hand-tamped, and finally oiled with 67 per cent asphalt Shell road oil.

The maintenance of macadam streets is done in much the same manner. The two-man crews start out and first clean the ditches; then they start on pot-holes and use oil for repairs. After a stretch of road is repaired, it is rolled with a 7-ton steam roller if the area warrants the use of the roller; otherwise, the patches are merely hand-tamped. In cleaning the ditches a light grader is used for the larger ones, but most of the work is done by hand.

Repairing Utility Cuts in Concrete Pavement

Where utility cuts are necessary in the concrete pavement, a permit is granted, and the cut made by the utility, the plumber or the city department. All backfilling and repairs to the trench and pavement are done by city forces under the direction of the city engineer. The trench is backfilled and hand-tamped in shallow layers to insure a firm foundation, and then brick are laid loosely over the top. These remain in place over the next winter to permit frost to complete the consolidation of the earth in the trench, and then the pavement is replaced with the same type, thickness and mix. In important intersections and crossings quick-setting cement is used; otherwise, the standard cement regularly employed for city paving is used.

The cost of maintaining the temporary paving, as well as the cost of backfilling and repaving for these utility cuts, is charged against the owner after the work is completed. No license fee or deposit is required prior to the granting of the permit to cut the pavement, and the city reports that there has been little trouble in collecting the charges after the completion of the work. The cost is carried as a lien against the property, the same as a tax, if the costs are not paid immediately.

In the past, all new paving was done by contract, but at the present time there are plans for some new paving by hand labor as a measure for relieving the unemployment situation.

Methods of Street Cleaning and Snow Removal

As soon as the streets are clear of snow in the spring, a crew of between 30 and 40 men are sent out through the city to hand-sweep all streets and clean all gutters. A newspaper notice is carried by the local press asking all householders to clear their yards of all rakings and place them in the area between the curb and the sidewalk for collection by the street-cleaning crews. This is not a clean-up proposition, but merely a scheme to get the accumulated débris of the winter from all the yards as soon as possible in the spring.

The normal street cleaning carried out through the warm months is done by about 18 men scattered throughout the city on all paved streets, and these men also clean up the macadam streets as they have time. Particular attention is paid to cleaning all streets and not merely the main thoroughfares. The men used in this work are older men who would normally be poor charges but who are in this way enabled to earn their way and give service for their competence. During the winter they are laid off, for the weather conditions are not conducive to this work, and the snow-removal activities require hardier men.

In addition to the hand-cleaning, the paved streets are regularly cleaned with the two South Bend double-unit power flushers owned by the city. One is a 1,500-gallon unit, and the other, a tractor-truck unit, has a 2,000-gallon tank. These flushers are equipped with Wausau V-type snow-plows in the winter for opening the roads to outlying communities which trade with Manitowoc.

The Public Works Director of the Future

By FREDERICK N. MacMILLIN

Executive Secretary,
League of Wisconsin Municipalities

THE standards of public service have been for some time definitely on the upgrade. Despite all the hysterical criticism, we know that many municipal departments—public works and otherwise—are now being operated at an efficiency that compares very favorably with private business. Public works officials and others will concede that perfection has not yet been attained, but they need not be too ashamed of this if they exert all possible energies to bring municipal affairs to as high an efficiency as possible.

While progress may be slower than some desire, nevertheless I believe the idea is rapidly disappearing that municipal government can be run by amateurs. There is a growing appreciation of the fact that municipal administration involves many technical problems and that each activity must be managed by individuals with sufficient training and experience in that particular field. In other words, municipal administration is being placed on a professional basis.

A Professional Status for Municipal Administrative Officials

We no longer hire barbers to care for our health, or doctors to build a house, nor do we want carpenters to run a police department or druggists to run a sewage disposal plant. The first municipal administrative position to reach this professional basis was that of superintendent of schools. The city manager was the next. I believe the public works director and other municipal administrative officials will soon attain the same professional standing.

Before such a professional status is reached, however, there are certain prerequisites substantially all of which have been attained by the profession of superintendent of schools. Some directors of public works undoubtedly have much of this protection now.

1. *Training and Experience.*—The first prerequisite is that of training and experience. It involves the recognition that key administrative positions must be filled by persons who are qualified either by education or by apprenticeship, and by sufficient experience. I have in mind practical training more than any formal educational requirements. Such positions can no longer be filled upon the basis of friendship, pull or the like.

Incidentally, it is my belief that in small municipalities the solution is to combine administrative positions so that a qualified person can be selected. I have in mind a small Wisconsin city of several thousand population. There a competent person with technical training is superintendent of the water works, superintendent of the electric plant, superintendent of the sewage disposal plant, building inspector, and fire chief, and probably performs a few more functions for good measure. And I understand that these duties are all performed in a creditable manner.

2. *Appointment.*—It is apparent that if technically trained men are to be selected as public works directors, such positions must be taken off the ballot. This has already happened in most instances. Just as a business concern would never leave the selection of a department head to a referendum of the stockholders, but rather entrusts this duty to the general manager, so must technical positions in municipal government be filled by appointment.

3. *Removal of Residence Restrictions.*—There should be mobility from city to city of successful public works directors. In Europe this stage has been reached for most municipal administrative positions. A man who has been a success in a small municipality has hope for a promotion to a larger one, and if he continues to develop in ability and resourcefulness, will go constantly up the ladder until he serves a large city. As a result, we find that in Europe the cream of the graduating classes in universities start out to make municipal administration their life work. It is far more important that a community procure for municipal administrators the best-qualified persons available than that it hand out jobs to local residents only.

4. *Non-partisanship.*—Municipal administrators must be placed on a strictly non-partisan basis. This is already the case in Wisconsin, since city and village government has been removed completely from the field of partisan politics. This law has been credited by the President of the League of Wisconsin Municipalities as having been a material factor in bringing city and village government in the state to its present high plane. The two largest newspapers in Milwaukee in recent months have both editorially testified to the beneficial effect of this law. As has been stated, "The people of Wisconsin realize that there are not conservative Republican methods of street construction, or progressive Republican methods of fire fighting, or Democratic methods of public health work, or Socialist methods of sewage disposal."

5. *Indefinite Tenure.*—A public works director should be selected for an indefinite tenure of office subject to immediate dismissal at any time that his duties are no longer being performed efficiently. The practice of appointment for fixed terms, particularly when these terms are short, tends to make it necessary for an administrative official to give consideration to certain factors that are an obstruction to the most effective performance of the duties of his office. Sometimes this also results in a throwback to the now thoroughly discredited notion that technical administrative positions in a municipality should be "passed around," or should be filled upon some basis other than merit. Fortunately, even where there is still periodic election of public works officials, in many instances there has grown up the tradition of permanency of tenure and it is increasingly possible to select this field as a life work.

6. *Adequate Remuneration.*—The compensation of public officials is not financial only. As Dr. Charles E. Merriam has pointed out, "Men are not paid merely in dollars and cents, but in terms of social regard and respect." Nevertheless, in order to compete with private industry over a long-time basis, it is necessary that adequate remuneration be paid for key positions in the public service.

In view of present conditions, it may seem futile to discuss this phase of the subject, but it has long been apparent that such stability as there is in the field of municipal administration is not due to salary inducements. The level of remuneration paid to those reaching the top must be such that a standard of living can be commanded which will be a sufficient incentive to induce the most promising material to enter the administrative career.

7. *Educational Advancement.*—There must be encouragement to those seeking to make public works administration a profession to secure professional or other higher educational qualifications. Not much more than a beginning along this line has been made in this country. Some of the state

leagues of municipalities have been conducting training courses for municipal officials, but very little has been done for public works officials. Some of the universities have made beginnings in the field. The city managers' organization has recently undertaken correspondence courses. There has been no development comparable to the professional courses conducted by the National Association of Local Government Officers in England whereby municipal officials may increase their knowledge of their field by correspondence courses if they do not live in easy reach of a university or technical school giving appropriate courses.

In England the professional associations of municipal officials have gone further and have developed standards of qualification which the cities have been willing to use in filling administrative positions.

In Conclusion

There are many other ways in which public works directors can formulate standards once their professional basis is established. In some instances progress has already been made by the International Association of Public Works Officials and by the American Society of Municipal Engineers, as in the field of specifications, records and cost accounting, etc. Some needed standards could be formulated in cooperation with other groups, as in the field of inspection, testing, purchasing, administrative organization, and the like.

In my mind, one of the tests of a professional basis for any group is the willingness of the members of that group to keep in touch with technical advances and successful investigations in their profession by reading—not only new standard books, but also professional journals, periodicals, special reports, etc. The public works director of the future will never think he knows it all, but will constantly be on the alert for new ideas.

Great care must be taken that favorable conditions for welding public works directors into a professional group are not used for bureaucratic purposes. Such an outstanding economist as J. A. Hobson has stated that "the sterilizing influence of bureaucracy upon the seeds of progress has passed into a by-word."

I trust, instead, that the public works directors of the future will develop a collective pride and a real spirit of craftsmanship. This will accompany the satisfaction that comes from liking one's work and doing it well. There are powerful incentives in working for all the people, and in the urge to distinguish one's self in the service of the state. There can well be built up to accompany this the prestige of public service that has been attained in other countries, and I believe that it is something to which the public works director of the future can look forward.

—From a recent address before the International Association of Public Works Officials.

To Make the Capital City Worthy of the State

A COMPREHENSIVE city plan, concerned with practically all phases of physical growth and improvement, has recently been completed for Jefferson City, Mo., by Harland Bartholomew and Associates, of St. Louis.

The plan proposes that the present Capitol grounds be enlarged. The additions to the east will enable a park-like treatment between the present Governor's Mansion and the Capitol, and will also provide an excellent overlook area on the river. The acquisition to the west would remove a number of small industries that are now objectionable. A small treatment is proposed south of the Capitol. The main entrance to the building is on this side, and a suitable approach is most desirable. Interesting views could be obtained of the Capitol from practically all sections of the city by this proposed treatment. The several state and municipal buildings that may be needed eventually are proposed to be grouped around the enlarged Capitol grounds.

The accompanying view also indicates how the proposed parkway system will encircle the city and connect directly with the Capitol grounds. Several park areas located along the routes will be interesting points of attraction and provide recreational opportunities to the surrounding residents.

FORWARD STEPS

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

Developing a Swamp into a Lake Park

EAST ST. LOUIS, ILL.—The Park District of East St. Louis purchased in 1912, at a cost of about $206,000, 1,130 acres of swampy marsh land situated about 2½ miles from the heart of the city. This site was an eyesore and blight to the community, owing to the marshes where, in stagnant water, swamp, brush and weeds, were the breeding-grounds of mosquitoes and other disease-bearing insects. We contended with these conditions until the year 1927, when, through the efforts of the various civic organizations and the Park Commissioners, the law was amended by legislative action so that we could increase our bonding and taxing powers through referendum vote in the Park District. The election was held, all propositions were carried, and we immediately started the development of this swamp into our largest park. The plans as designed by the writer called for the reclamation of about 600 acres of land for recreation and park purposes, and the construction of three lakes and a boating basin, as shown in the aerial view.

The fulfillment of these plans necessitated the excavating, pumping, conveying and depositing of mud, clay, sand, gravel and stone from water areas to land areas. The contract was awarded to the Minneapolis Dredging Co., which used a Morris hydraulic dredge and thus accomplished these multiple operations within the contract time.

The contract involved the removal of approximately 4,000,000 cubic yards of material, by deepening the lake areas to 6-foot depths, and depositing the same material through discharge pipes, filling adjacent swamp land to about an average of 4 feet above established water elevation. At times, the discharge pipes were almost 5,000 feet in length.

At the present time we have three lakes of clear, sparkling water, with sand shores, the smallest being 50 acres, and the largest, 225 acres, besides 800 acres of high ground which is rapidly being transformed into park and recreational grounds so as to include an 18-hole scenic golf course, tennis courts, bathing beaches, bridle-paths, athletic fields, picnic and play grounds, walks, paths and almost 35 miles of boulevards, all of which when completed and added to the present facilities of swimming, fishing, boating and other water sports, will have greatly increased the civic value of this area.

EMMETT P. GRIFFIN,
Superintendent and Engineer, East St. Louis Park District.

The Rescue Work of the Vancouver Fire Department

VANCOUVER, B. C.—A special service has been provided to the citizens of our city by the rescue crews of the Vancouver Fire Department. Our experience with Inhalators has shown their value in resuscitating persons apparently drowned, gassed or overcome in various other ways. I believe that they should be part of the equipment of all fire departments, if only for the use of the firemen, who often have to battle heavy smoke and fumes in the line of duty, and when a fireman or fire victim is overcome, the treatment in that case should be given on the spot. Oxygen is what is required, and to send cases to a hospital is a loss of time, and may mean loss of life, before respiration is restored.

The men charged with the operation of these machines should understand the principles of first aid, and be thoroughly trained in the art of applying the Schaefer method of artificial respiration. Experience with this method shows that the beginner has a tendency to put too much pressure on the patient, which is not necessary. My system of overcoming this is to use the student as a victim, and work on him myself, instructing him to watch my timing, and also the pressure. In this way I find that the awkwardness of the student is quickly overcome.

The city of Vancouver has a population of 275,000, and the Fire Department has a staff of 368 men, working under the two-platoon system. We have 18 fire stations, and companies No. 1, No. 12 and No. 22 are on special call as Inhalator crews. We are also equipped with 60 of the latest types of masks. These include the 2-hour and ½-hour McCaas, Burrell All Service Cannister Masks, and American and English Air Hose Masks. Our Inhalators are the H. and H. and Davis.

The following list is the official record of the work done by the rescue crews. Previous to 1930 we were not in a position to give this service to the public.

	1930	1931	1932	1933	Total
Illuminating gas.	13	10	13	20	56
Drowning	5	5	8	2	20
Carbon monoxide.	1	0	3	1	5
Methyl gas	1	0	0	0	1
Poisoning	0	0	1	0	1
Sulphur dioxide..	0	1	0	0	1
Cyanide fumes...	0	9	0	0	9
Fumes at fires...	1	1	0	1	3
Wheat dust.....	0	0	0	1	1
Electric shock...	1	0	0	0	1
Charcoal fumes...	0	0	0	1	1
Collapse	0	0	0	2	2
	22	26	25	28	101

This list is a true account of the lives saved by our crews from April 16, 1930, to November 10, 1933. A complete record of each individual case is kept by this department. We have had a total of 185 Inhalator calls; 84 of the persons represented were dead before arrival or were overcome by heart failure, apoplexy, or some natural trouble. In cases where we have had a chance, we have generally been successful.

J. ANDERSON,
Captain, First Aid and Gas Masks, Vancouver Fire Department.

AIR VIEW OF THE EAST ST. LOUIS DEVELOPMENT
Involving the reclamation of 600 acres of swampy land for park and recreation purposes

How Springfield Disposes of Its Worn-Out Automobiles

SPRINGFIELD, MASS.—The Department of Streets in Springfield has been receiving inquiries from many communities concerning its plan for disposing of worn-out automobiles, and recently, at a special meeting of the committee on streets and alleys of the Massachusetts Civic League, in Boston, Springfield's procedure in this matter attracted much attention. Round about this city one never sees the roadsides cluttered with cast-off cars, nor is it a practice in the Springfield area to dump this junk into creeks and ponds, for there is the Hotel O'Shay dump, the graveyard of hundreds of cars and many yet to come.

There is a large declivity in the center of the dump section, and here, after a car is stripped of every bit of usable material and parts, it finds a last resting place, and in the course of time, is buried deep under loads of ashes. Generally the owner of a car to be junked brings the old wreck to the dump.

Hotel O'Shay is surrounded by landscaping, all done by welfare workers. In time all the filled-in land will be converted into a park, and the automobiles buried under it will never be suspected. Deputy Superintendent of Streets Arthur Woodward says that from 25 to 30 old cars are buried here every week at this time of the year, and some straggle in all during the year. As an underpinning for filled-in land these junked cars serve a wholesome purpose.

S. M. NEAL.

Portland's Police Radio

PORTLAND, MAINE.—The first installation of a police radio transmitter in the state of Maine was made six months ago for the city of Portland. The foresight and judgment of the City Council in procuring this equipment for increased efficiency in police work will never be questioned.

With Police Headquarters in constant contact with its cruiser cars, all complaints, reports of accidents and calls for help are responded to in the quickest time possible. Many times trouble is avoided, and often a life may be saved, by the quick arrival of our car at a designated point. The districts covered by each car are so divided that the cruiser can go from one end to the other in about five minutes and cruise the entire area in half an hour. The average time of the response to a call is slightly over two minutes. Two men are assigned to a car, and on serious missions two or more cars are sent.

A log of all messages sent is kept at Headquarters, and the men in each car record the messages sent to it, as to time of reception, arrival at destination, and clearance from the call. All bell and still alarms of the Fire Department are relayed to the cars in about thirty seconds. It is not unusual for the police to arrive at the fire before the appartus.

The citizens have developed a strong feeling of security in the knowledge that our Department has the facilities to combat all phases of crime. It has become as essential as the telephone in our work. The number of messages sent varies from fifteen to fifty daily. Our records show a remarkable decrease in offenses against the law since the installation of the radio, which tends to make evident that lawbreakers are cognizant of the fact that very soon after detection the police cruiser will be on the scene.

POLICE RADIO TRANSMITTER, PORTLAND, MAINE

Our Station, WPFU, operates on a carrier frequency of 2422 kc by authority of the Federal Radio Commission. Our transmitter is a 100-watt Hygrade Sylvania installation.

RALPH D. BROOKS,
Chief of Police.

Newton's Experience with Community Fire Service

NEWTON, KANS. — Community fire trucks are legal in Kansas, and the city of Newton—11,000 population—was the first in the state to get under way a fire equipment arrangement by which both the city and the surrounding trade territory could be protected.

The city's fire apparatus was too large for country roads and runs, and was not practical where gritty water had to be used; and the chemical and booster tanks were too small for use at rural fires where city water was not available. A thorough investigation was made of different types of fire equipment, in order to find what would best meet the conditions and come within the sum which the city and townships could pay. At a meeting of the city and the boards of several nearby townships the whole matter was explained, and Newton City and Newton Township agreed to finance the cost of the fire truck, while the more distant townships agreed to pay for fires responded to within their borders, $8 to be the minimum charge. The 1½-ton truck cost about $2,000 to build in our own shops; the firemen themselves did all the work upon it except the electric welding. The chassis is a 1½-ton Chevrolet.

Certain equipment taken from another fire truck provided a portion of what was needed, the rest being purchased, including a 350-gallon Barton centrifugal fire pump, which had to do the following things: draft water the maximum distance without delay; stand up under severe treatment and various conditions; pump, through long lines of hose, water with a large percentage of grit or dirt; and with all this, it was necessary that the pump be moderately priced and easily mounted on the truck.

The results prove that our judgment was sound in selecting the pump for this purpose. This piece of apparatus is the best little fireman we have. We have not laid a big 2½-inch line to put out a fire of any kind since April 19, 1933, and we have put out all fires so far with the little truck and the booster pump. The machine has answered 60 alarms in the city and 14 in the country this year, and has done the work satisfactorily. It has responded to calls as far away as 25 miles, and even at that distance was able to save adjoining property. During the first month of its operation, it saved farm property worth several times the cost of the truck, and the farmers near the city regard it as their best investment.

The community truck does not supersede but supplements and relieves the large machines, thereby greatly reducing operation cost of fire control. If a fire in the high-value district proves to be one where the big machines are needed, the community truck immediately returns to the station.

F. P. MOORE, Fire Chief.

TESTING THE PUMP OF THE COMMUNITY FIRE TRUCK

Five Needs of the Public Service

THE chief needs of American public service are five very simple ones: honesty, courage, common sense, knowledge and vision. The character-building forces of the nation—the home, the school, the church, the college—must be depended upon to provide the honesty and the courage. Nature, and nature alone, can furnish the common sense. To honesty, courage and common sense, the university can and should add knowledge and vision. Given these qualities, we are in the presence of the ideal public servant.

It will be difficult, when the present emergency shall pass, to prevent our people from drifting back into their old political habits, which are the outgrowth of careless indifference until something very personal and very moving takes place to rouse them. It is to the younger generation that we must look for hopeful continuance of that widespread interest in public policies and that widespread participation in their discussion and criticism which now exist. Democracies may not fall asleep without risking their lives.

—From the annual report (December, 1933) of President Nicholas Murray Butler to the Trustees of Columbia University.

Reforms Urged in Tax-Exemption Procedure

SUGGESTING that no land acquired for any purpose in future by non-governmental bodies should be added to the tax-exempt rolls, the City Affairs Committee of New York has issued a study in which it is declared that city and state have been "generous beyond reason" in their tax-exempt policy.

"The most obvious abuses which our committee has discovered during the course of this study," the report says, "are the profiteering in land by churches which sell real estate at a profit after it has risen in value, and the practice of holding land out of use while still receiving tax exemption. A further abuse is that of many cemeteries in New York which have bought land at a low price and sold lots at exorbitant prices, and the tax department has made no thoroughgoing check to determine what becomes of such huge cemetery surpluses. In Staten Island hundreds of acres of the most desirable land on the island are being held out of use by churches, missions, and schools while the ordinary taxpayers suffer. These institutions should be granted tax exemption only on the land which they actually use for religious or educational purposes."

The committee's report also declares in favor of taxing the increment on tax-exempt land although exempting present valuation. "Many sound reasons could be advanced," says the committee, "for a general policy of taxing all privately owned property which is now exempt, but the present state of American public opinion would not permit this. Such an inhibition, however, does not apply to the *increment* on land used for tax-exempt purposes. The New York State Commission for Revision of Tax Laws in its 1932 report favored taxation on all future increases in the value of exempt land, and we believe that this policy is fundamentally sound. Whatever may be said about the right of a church to claim exemption on buildings and on land, there can be no claim by religious organizations to increased land value. The taxpayers, by paying for transit lines, paving, sidewalks, and police and fire protection, create the increased value of New York City land."

Birth and Death Registration in the United States Now Complete and Uniform

THE State Department of Health in Michigan publishes a monthly bulletin which is always interesting and valuable. In a recent issue it calls attention to the progress of our country in the matter of vital statistics:

"For the first time in history, the birth and death statistics of the United States will be complete for the entire country. Texas, the last of the states, has been admitted to the Registration Area, which at the same time makes the registration of births and deaths uniform and eliminates the Registration Area itself.

"It has been a slow process. The Death Registration Area was established first, and gradually the states qualified for admission. Then the Birth Registration Area was established, in 1915, and as the laws requiring the reporting of births and the enforcement of these laws in the various states came up to the Federal standard, the states were admitted to the Area. With the recent admission of Texas to both Birth and Death Registration Areas, the list of qualifying states was complete and the Registration Area became synonymous with the United States. Birthrates and deathrates can now be reported for the whole United States, putting this country in the front ranks of the progressive nations so far as public health statistics are concerned."

How Per Capita Taxes Are Being Lowered

THAT municipal costs have not increased to the extent alleged by many advocates of budget-slashing, but that, on the contrary, per capita tax assessments in the larger American cities have actually decreased in the last ten years, is evident from a study of municipal taxation by C. E. Rightor of the Detroit Bureau of Governmental Research, appearing in the December issue of the *National Municipal Review*.

The assessment figures for the fifty largest American cities, according to Mr. Rightor, "show an impressive conservatism" when compared with the figures of 1923. Exclusive of New York City, they reveal "a reduction of 2 per cent for the ten-year interval, rather than an addition."

Rightor's study is based on a tabulation of tax rates upon property for the current year in 284 cities having over 30,000 population in the United States and Canada. It was compiled from questionnaires sent to 310 American and 18 Canadian cities, and is the twelfth compilation of its kind published annually by the *National Municipal Review*.

The average tax rate for all cities (279 reporting completely) was $34.61. This indicates an average decrease of $1.10 per $1,000 valuation in the past year, as the average rate for 277 cities last year was $35.71.

"The demand for further tax relief," states Mr. Rightor, "continues unabated. Attack of the problem of taxation is being made on many fronts—reduction in taxes levied, limitation on tax rates, limitation on governmental expenditures, new sources of revenue, legislation to regulate current and delinquent tax collection, etc. Some of this legislation, according to a digest in *Municipal Finance* for November, is salutary, while much is harmful.

"That there are two sides to tax reduction is made evident from the invaluable series of radio programs presented last year and this year by the Committee on Civic Education by Radio, as well as by the Committee on Citizens' Councils for Constructive Economy of the National Municipal League."

Recent City Manager Appointments

J. H. Bennington, City Clerk for two years, has been appointed City Manager of Yale, Okla., to succeed F. C. Elsey.

Harry H. Freeman, appointed City Manager of Asbury Park, N. J., on December 15, has been on the staff of the New York Bureau of Municipal Research, and City Manager of Kalamazoo, Mich., 1918-1921. Since 1927 he has been Managing Director of the Buffalo Municipal Research Bureau.

H. A. Haden, who has been selected the first County Executive of Albemarle County, Va., was formerly City Auditor of Charlottesville, Va.

John F. Hassler, a former banker, was appointed City Manager of Oakland, Calif., on December 1, to succeed O. E. Carr.

George Kelly has been appointed City Manager of Warrenton, Ore.

William G. Powell, Manager of the Industrial Bureau at Lawrence, Mass., has been selected as the first City Manager of Ashland, Ky., to take office January 1.

Elmer Prince has succeeded W. E. Brooks as City Manager of Morgantown, W. Va. Mr. Prince has been City Engineer of Morgantown since 1926. Mr. Brooks had been Manager since September, 1925.

Fred Steiner, a former councilman, succeeded C. O. Dunbar as City Manager of Santa Rosa, Calif., in November. Mr. Dunbar had held office since April, 1926.

F. F. Whitlock, the new City Manager of Sulphur, Okla., succeeds E. F. Wiggins, who had been Manager since 1929.

CLARENCE E. RIDLEY,
Executive Director, The International City Managers' Association.

Recent News from the PWA and the CWA

(See also pages 5, 39, 44, 46, 60, 73, 74, and 75 of this issue)

PWA to Finance 2,000 New Aircraft Landing Fields Throughout the United States

PLANS for a network of aircraft landing fields to be established on municipally provided ground at 2,000 cities and towns throughout the United States which have either no facilities or inadequate facilities for aircraft operation have been announced by Eugene L. Vidal, Director of Aeronautics of the Department of Commerce. The work will be undertaken in accordance with the provisions of an allotment of both labor and material to the Aeronautics Branch of the Department by the Civil Works Administration.

Municipalities which wish to acquire landing fields must set aside the necessary ground and apply to the Aeronautics Branch of the Department of Commerce, at Washington, for assistance in making it suitable for the use of aircraft. One purpose of the landing-field program is to provide work immediately for the unemployed.

More Than $10,000,000 for Labor and Materials

The project involves expenditures of more than $10,000,000 for labor and materials, of which more than $8,000,000 will go for wages to over 50,000 persons now unemployed. Municipalities will provide only the unimproved land, which may be either owned or leased by the community. Cities and states will be asked to loan road-building machinery necessary for the grading and leveling. The average cost of conditioning a field is about $5,000, only about $630 of which is to be expended for material and the remainder for labor. A field should consist of two landing strips up to 3,000 feet long and 300 feet wide, except in locations where terrain or other conditions limit the area to one strip. The strips will be marked for identification from the air.

It is anticipated that the larger towns and cities which as yet do not have airports will be the first to recognize the advantages of this plan. But it is important also that emergency fields be established in localities where large towns do not exist, and Mr. Vidal points out that even the smallest villages are eligible. Each state will be entitled to have a certain number of landing fields established, the number depending upon the size and population of the state, and it is expected that these landing fields will be distributed in such a manner that they will be of the utmost service to air men and their aircraft.

Applications have been received with remarkable rapidity, but this should not deter cities and towns which have not already made application from filing their requests at once by telegraph, since the distribution cannot be complete for some time.

Important Revisions of CWA Rules and Rates

IMPORTANT additions and revisions to the rules and regulations on the hours of labor, wage rates, and conditions of employment under the Civil Works Administration to apply throughout the country, were announced on December 15 by Harry L. Hopkins, Federal Civil Works Administrator.

The revised rules continue to bear out the policy of the CWA that "all persons employed on civil works projects shall be paid just and reasonable wages, which shall be compensation sufficient to provide, for the hours of labor as limited, a standard of living in decency and comfort."

Among the important new points are rules on the employment of clerical workers, including the stipulation that they may be employed up to 39 hours a week, as well as the setting of minimum wage rates. On clerical, office, statistical, survey, and general white-collar jobs, the prevailing rate in the community shall be paid, but not less than the following rates:

	Base	Intermediate
Southern Zone...	$12 per wk.	$15 per wk.
Central Zone.....	15 per wk.	18 per wk.
Northern Zone...	18 per wk.	21 per wk.

	Operating Supervisory	Technical Supervisory
Southern Zone...	$18 per wk.	$18-$35 per wk.
Central Zone.....	21 per wk.	21- 40 per wk.
Northern Zone...	24 per wk.	24- 45 per wk.

The rates for skilled and unskilled labor on construction projects remain unchanged, but the rules have been augmented to cover semi-skilled labor. The rates for semi-skilled labor, the new rules state, depend upon local custom. These rates shall be set between the wage rate for skilled and unskilled labor in accordance with local prevailing rates, unless otherwise provided for by agreements approved by Public Works Administrations within or through the state, in which case these agreed rates apply. The minimum rates for skilled and unskilled labor are not to be used in discriminating against assistants, helpers, apprentices, and serving laborers who work with and serve skilled journeymen mechanics and who are not to be termed "unskilled laborers."

Another important addition to the regulations permits the obtaining of union labor in the customary ways through recognized union locals.

With regard to prevailing hourly rates, the rules state:

"If the prevailing hourly rate prescribed under collective agreements or understandings between organized labor and employers on April 30, 1933, shall be above the minimum set for any district within the zone, that agreed rate shall be paid to persons on civil works projects financed by Federal civil works funds.

"In the event that any question shall be raised as to what wage rates prevail in any district under agreements and understandings between organized labor and civil works administrators, the United States Department of Labor shall determine such rates if and when requested by state civil works administrators, before starting operations on a project.

"A Board of Labor Review has been created by the Public Works Administration. This Board shall hear all issues arising under the operation of all work financed from funds allocated by the Administrator of Civil Works and from such problems as may result from fundamental changes in economic conditions. The decision of the Board of Labor Review shall be binding upon all parties."

"Civil Works" and "Civil Service"

The difference between civil works job and "civil works service" jobs is also made clear. The difference is described as follows:

"Civil works service employees include all persons employed on projects directly relating to relief offices, such as nursing services, interviewing and investigating, work in sewing and canning centers, etc., and all persons employed on projects such as vocational education, adult education, nursery schools, etc.

"Wages, expenses, and payments for material on civil works service projects shall be paid from available relief funds. The maintenance of maximum identity of civil works and civil works service employees is essential, while maintaining at the same time the necessary distinction as to source of funds.

"All persons employed on civil works service projects must be drawn from persons eligible for relief.

"Determination of eligibility for relief may be made in cooperation with professional organizations through the appointment of professional committees to present the needs of applicants for civil works service positions."

Can County Gas Tax Allotments Finance PWA Loans?

AN interesting situation has arisen in Indiana, where Public Works Administrator Harold L. Ickes and Governor McNutt of Indiana have agreed on a test allotment and a test suit to determine the legality of the proposals of various Indiana counties to construct county roads or bridges with PWA loans secured by gasoline tax and motor-vehicle license fees allotted to the counties by the State Legislature.

Because of self-imposed Indiana state restrictions beyond the control of PWA, the legality of such action by the Indiana authorities has been challenged. Exhaustive examination of Indiana statutes by the PWA legal division reveals no authority which would empower counties to issue such warrants. Indiana officials have not seen fit to clarify this situation by state legislative action, which might require a special session. In summarizing its conclusions the PWA legal division reported to the Administrator: "Not only does there seem to be a lack of power to issue warrants to finance the improvement of roads or bridges in counties, but there are provisions in the statutory laws of Indiana which lead toward the conclusion that the issuance of such warrants is prohibited."

PWA Stimulates Organization of State Planning and Housing Boards

Many States Organizing Planning Boards

THE organization of State Planning Boards to cooperate with the National Planning Board has gone ahead with remarkable speed and enthusiasm since the recent announcement* of the availability of Federal funds for state and local planning. Reports and inquiries received by the National Board indicate current activity in more than twenty-five states, with strong possibility of official action in almost all of them.

The Federal Emergency Administration of Public Works has allocated funds for the employment by the National Planning Board of qualified planning experts whose services will be available on selected regional and state planning projects where state or regional planning agencies may be found ready to cooperate. Among the conditions which the National Planning Board has laid down for state planning agencies requesting assistance, are:

1. Appointment by the Governor of an unpaid State Planning Board, including perhaps four department heads, such as public works, highways, conservation and health, together with three citizens.

2. Assurance by the Governor that if this State Planning Board gets under way he will sponsor some legislation to put it on a continuing basis.

3. The assignment from existing state offices or application to the Civil Works Administration for drafting and stenographic help to carry on the work of the proposed board.

4. Development of a planning program, giving the status of planning work already done and outlining specific studies to be undertaken in, say, the next six months. It is hoped that this program will include a land-use study, a ten-year program of public works, and perhaps a study for the integration of the transportation system within the state.

5. Any suggestions the Governor or the new board may wish to make of a qualified planner to direct the work.

6. Statement of the Governor's willingness to appoint the planner, or the chairman of the State Planning Board, as the state representative on a regional or inter-state planning committee, if such committee is organized.

The National Planning Board suggests that the first goal of a State Planning Board should be the preparation of a preliminary plan which may well include (1) a program of public works for a considerable period, (2) a proposed transportation system, (3) a general classification of the area of the state into the principal recommended land uses, and (4) other studies and projects such as housing, government reorganization, etc., as may be indicated in each state. Definite suggestions for procedure are given in the "Fifth Circular Letter," obtainable from the National Planning Board, Interior Building, Washington, D. C.

State Planning Boards have already been appointed in more than fifteen states, and applications for assistance have been received by the National Planning Board from a number of the agencies. Projects for assignment of planning advisors have been approved by the Public Works Administrator, Harold L. Ickes, for New Hampshire, Illinois, Connecticut and Utah.

* See THE AMERICAN CITY for December, page 73.

Official Housing Authorities and Boards

THE rapidity with which the building or control of slum clearance and housing projects is becoming a public function is indicated by the number of official housing authorities and boards already organized in the United States. Through the courtesy of the recently formed National Association of Housing Officials, THE AMERICAN CITY is able to publish the following list of state boards and metropolitan authorities as of December 26, 1933:

State Boards

Arkansas State Housing Board
Chairman—Vincent M. Miles, Fort Smith, Ark.
Secretary—Glenn E. Riddell, 321 Union Station, Little Rock, Ark.

California Commission of Immigration and Housing
President—Most Rev. E. J. Hanna, 1100 Franklin St., San Francisco
Chief, Division of Immigration and Housing Vincent S. Brown, State Building, San Francisco

Delaware State Board of Housing
President—John K. Garrigues, Delaware Trust Bldg., Wilmington
Secretary—L. V. Smith, Delaware Trust Bldg., Wilmington

Florida Housing Board
Chairman—Governor David Sholtz, Tallahassee

Illinois State Housing Board
Chairman—Alfred K. Stern, Room 1829, 162 N. LaSalle, Chicago
Secretary—Coleman Woodbury, Room 1829, 162 N. LaSalle, Chicago

Kansas State Board of Housing
Chairman—J. C. Mohler, State House, Topeka
Secretary—Earle G. Brown, State House, Topeka

Massachusetts State Board of Housing
Chairman—Sidney T. Strickland, 1126-27 Statler Bldg., Boston
Secretary—Charles P. Norton, 1126-27 Statler Bldg., Boston

New Jersey State Housing Board
(Board not appointed as yet)

New York State Board of Housing
Chairman—Darwin R. James, 291 Broadway, New York
Secretary—George Gove, 80 Center St., New York

Ohio State Board of Housing
Chairman—Clyde Johnson
Secretary—O. W. L. Coffin, 811 Wyandotte Bldg., Columbus

North Carolina Housing Board
Chairman—J. M. Broughton, Raleigh
Secretary—Eugene Newsom, Durham

South Carolina State Housing Board
Chairman—Robert L. Sumwalt, Columbia
Secretary—C. G. Shockley, Columbia

Texas Relief Commission
Director—Colonel Lawrence Westbrook, Austin

Metropolitan Authorities

Cincinnati, Ohio
Hamilton County Metropolitan Housing Authority
Chairman—Stanley M. Rowe

Cleveland, Ohio
Cleveland Metropolitan Housing Authority
Chairman—Marc J. Grossman, 216 City Hall, Cleveland

Toledo, Ohio
Toledo Metropolitan Housing Authority
Chairman—Charles F. Weiler, 410 Nicholas Bldg., Toledo
Secretary—Leonard C. Price, 410 Nicholas Bldg., Toledo

Milwaukee, Wis.
Board of Public Land Commissioners
Chairman—Frank J. Harder
Secretary—Charles B. Whitnall

Federal Authority

Housing Division, Public Works Administration, Washington
Director, Robert D. Kohn

Charles S. Ascher, Secretary of the Public Administration Clearing House, formerly Secretary of the City Housing Corporation of New York, has been elected Executive Director of the National Association of Housing Officials. Coleman Woodbury, Secretary of the Illinois Housing Commission, will be associated with Mr. Ascher on the headquarters staff of the organization, 850 East 58th Street, Chicago.

On the Need for Planning and Housing Authorities

"LET the skeptical reader who still doubts the need of a planning authority walk through any of our cities and note where the people live. Let him observe the slums, the blighted areas, the darkened, narrow and congested streets; then let him go into the suburbs and note the rows and rows of monotonous and tiresome housing, and as he goes away from there, let hi mcount the filling stations, hot dog stands, and roadside markets, where private initiative has transformed the people's wonderful highways into mere soul-depressing lanes of traffic, not subordinate to public interest and whether it is not time for individual greed to give way to an ordered plan for the greater good of the greater number. If he still insists that a planning authority is but another step toward socialism, let him finally ask himself, what is practical socialism but government of the people, for the people and by the people —let him remember that this is the kind of government that the Great Emancipator said should not perish from the earth."

—From "Cities Fit to Live In," by Ross F. Tucker, Professor of Building Engineering and Construction, Massachusetts Institute of Technology, in the *Technology Review* for October, 1933.

Why Not Federal Aid for Local Public Safety?

WHEN the National Industrial Recovery Act was being drafted last spring, the Editor of THE AMERICAN CITY brought to the attention of Senator Robert F. Wagner the importance of defining "public works" in the bill in a sense broad enough to cover not merely projects of the kind ordinarily listed under public works, but also such municipal improvements and services as equipment for police and fire departments, street lighting, traffic control, street cleaning, garbage collection, playground equipment, etc.

The Act as finally passed contained in Section 202 (a) the phrase "and any publicly owned instrumentalities and facilities." In explanation, Senator Wagner wrote to THE AMERICAN CITY (June 7, 1933): "I gave careful consideration to your letter of May 1. In so far as the type of municipal equipment to which you refer can properly be designated as a project, I am sure that the municipalities would experience no difficulty in securing finances under the new bill. There is an indisposition, however, to extend the terms of the bill to include 'services.' That would, in effect, authorize the financing of ordinary municipal operation."

Notwithstanding this interpretation by the chief sponsor of the public works section of the National Industrial Recovery Act, a needlessly narrow definition seems to have been adopted by the Public Works Administration in the allotment of funds. Because of the special bearing of this interpretation on problems of public safety, THE AMERICAN CITY has asked the National Board of Fire Underwriters and the National Fire Protection Association for statements on the subject.

As the N.F.P.A. Sees the Problem

Franklin H. Wentworth, Managing Director of the National Fire Protection Association, writes under date of December 28, 1933:

"Our field men are reporting that many of the cities they have visited this year have ceased to make the purchases of fire apparatus which they would make in normal times for replacement or to extend the municipal fire protection. This practice appears to be fairly general throughout the country.

"There are a good many cities and towns throughout the United States that need new fire apparatus for adequate fire protection. Many of them have been unable in the past to provide this apparatus because of lack of funds. If this policy is followed for any extended period, there is not the slightest doubt that the situation will become critical in certain communities.

"The safety of our cities and towns from fire is of paramount importance and must not be neglected. The purchase of fire apparatus by cities is an excellent way to increase the employment of men in industry and will definitely help the recovery of business by insuring against the disaster of serious conflagrations which the country can ill afford today.

"It is hoped that the Public Works Administration will look favorably on the furnishing of funds for the purchase of fire apparatus and other fire protection facilities.

"There are two other items of importance which should be included in any discussion of municipal fire protection.

"Municipal fire alarm systems are an important branch of the municipal fire service and constitute an item which, while involving a substantial initial expense, nevertheless distributes its benefits over a period of years, as such systems have a long life. Many are in service for periods in excess of twenty-five years. Even in normal times many cities find it difficult to allot the necessary funds for this major item of protection, and consequently their fire alarm systems are inadequate. The improvement of these existing systems and the installation of new systems appear to us to be a logical application of PWA money.

"Under the jurisdiction of Federal, state, county and municipal governments are schools, institutions and public buildings which need automatic sprinkler protection in order to offset the serious life hazard due to defects in the construction or arrangement of the buildings. In all public types of buildings where people congregate, are invalided, or under detention, this form of fire protection is of paramount importance. PWA money has already been appropriated in a number of cases to provide this essential protection. This will benefit the communities by increasing the useful life of the buildings, at the same time making unnecessary their abandonment because of the inherent fire hazard."

The Underwriters' Point of View

The National Board of Fire Underwriters has expressed its views to Henry T. Hunt, General Counsel of PWA, in a letter from which the following paragraphs are quoted:

"About twenty years ago American fire departments began the installation of automobile fire apparatus, and today most of the horse-drawn equipment has been replaced. Except for the period of the World War, this replacement of apparatus continued along a rather definite program, with the result that at the present time most of the fire departments are completely motorized. But this program of replacement has not permitted, in any but a few cities, the accumulation of much reserve equipment, except some of the older apparatus which was of rather inferior quality and is not now in a condition or of a design to justify its being classed as suitable for reserve.

"Records of the fire apparatus manufacturers and the reports made by our engineering staff indicate that there has been a very material reduction in the purchase of fire apparatus by cities during the past four years; in fact, at the present time the number of cities that can provide for such purchase in their budgets is small. In one of the largest cities of the country it was recently reported to us that a number of the fire engines are to be held in service, although they are in such condition as to justify their replacement or material overhauling.

"Considerable allotments of PWA funds have been made to improve water-supply systems and thus make available a greater quantity of water for fire protection. This will not be of full value without corresponding improvement in fire department equipment or at least maintaining in service the present amount, which can be brought about only through the purchase of sufficient reserve equipment, and of new apparatus to replace that destroyed by collisions or which has become obsolete. It is to be hoped that in view of the national importance of protecting our cities and towns against conflagration conditions a ruling may be made whereby fire apparatus will be included along the items eligible for financing under the Public Works Act.

Civil Works Projects for Fire Prevention

IN its *News Letter* for December, the National Fire Protection Association calls attention to the availability of Civil Works Administration funds for certain types of fire prevention activities. For example:

"*Clearing of Rubbish and Grass in Cities.*—Fire departments make many needless runs to fires in rubbish in vacant lots, and to brush and grass fires which often spread to buildings. Most of these fires can be prevented by the wholesale clearing up of these breeding places for fire. The fire departments in most cities can direct such projects by making lists of the places needing to be cleared, and getting the necessary men assigned by the local CWA to do the work.

"*Providing Rural Water Supplies.*—In rural communities the CWA projects offer an opportunity to make water supplies available for use by fire departments. This will include surveying each township or county for location of potential water supplies for fire department pumper suction, within reasonable distance of every group of buildings, the construction of dams to impound small quantities of water, and driveways to water holes."

CWA Funds for Traffic Safety

Thirty practical suggestions as to how CWA funds could advantageously be used for street and highway traffic improvement projects are given by Burton W. Marsh in his article entitled "Making Unemployment Relief Funds Save Lives in Traffic" in the 1933 Municipal Index.

Items of Municipal and Civic Interest

Housing Survey of Sixty Cities to Be Completed by February 15

THE "Real Property Inventory," financed by CWA funds, with field work organized by the Bureau of the Census and drawing more than 11,000 men and women from the unemployment rolls of some 60 cities, is to be completed by February 15, according to an announcement by Willard L. Thorp, Director of the Bureau of Foreign and Domestic Commerce.

The information to be gathered covers a wide range of subjects dealing primarily with residential property. Included will be data showing the condition of the property with regard to repairs and improvements, the number of vacant houses and apartments, the number of families that have doubled up because of the depression, the physical character of the structures, the equipment installed, and information of a similar character.

The survey will also show the average current rental, which can then be compared with census data for 1929. The range of basic facts and figures is wide and is believed essential in establishing for the guidance of the public, the building industry, and the Government, the exact status of the housing situation as it exists in typical cities in this country today.

Commission of Inquiry on Public Service Personnel

FOR the purpose of making constructive recommendations for the future guidance of local, state and national governments on the broad problem of public service personnel, a comprehensive national inquiry is to be undertaken, with the approval of President Roosevelt, by a commission announced on December 10 by the Social Science Research Council, an organization drawn from seven great national scientific societies.

The Commission of Inquiry on Public Service Personnel is headed by L. D. Coffman, President of the University of Minnesota. The Social Science Research Council named the Commission. At the request of the Council, the Spelman Fund, one of the Rockefeller trust funds, financed the study.

The Commission will consider policy and method in the recruiting, selection, compensation, training, promotion and tenure of the administrative and technical personnel of national, state and local governments. It will make a report to the American people at the end of 1934.

In addition to President Coffman, Chairman, the Commission of Inquiry includes Louis Brownlow, Public Administration Clearing House, Chicago, Ill.; Ralph Budd, President, Chicago, Burlington & Quincy Railroad, Chicago, Ill.; A. L. Day, National Academy of Sciences, Washington, D. C.; and Professor Charles E. Merriam, University of Chicago, Chicago, Ill. Dr. Luther Gulick, of Columbia University, Director of the Institute of Public Administration, will be the director of the research Commission. The members of the Commission were chosen on the basis of their ability for impartial, objective judgment of the situation. Headquarters for the Commission will be set up at 302 East 35th Street, New York.

Forty-Five Years in Public Office

ON December 31, just past, M. E. Gustin, of Lebanon, Ohio, completed 45 years of continuous public service in municipal office. Beginning in 1887, Mr. Gustin served as township and corporation clerk for 31 years, and as Mayor of the village 14 years. He is in his 86th year. THE AMERICAN CITY would be interested to hear of records approaching this one—whose length attests its honorableness.

An Ordinance to Provide Better Motion Pictures for Children

A NEW plan of action is proposed, and the definite text of a model municipal ordinance is suggested, for the regulation of the attendance of children at motion picture performances, by George J. Hecht, publisher of *The Parents' Magazine*. Control over the theaters would be through a licensing method, a condition of the licensing being that on at least one afternoon and one evening, of either Friday or Saturday or Sunday, and at as many additional performances as the theater desires, there shall be exhibited only those films which have been approved as being suitable for family audiences by a local motion picture commission.

The ordinance further provides that children under ten years of age shall not be admitted to motion picture theaters except at "family audience performances" and then only if accompanied by a parent, teacher or guardian. Children from ten to seventeen years of age, inclusive, shall be admitted unaccompanied to family audience performances, but can attend other performances only if accompanied by a parent, teacher or guardian.

In Mr. Hecht's opinion, the enactment of such an ordinance in a goodly number of municipalities throughout the country will provide an increasing market for films suitable for family audiences. The result of this will inevitably be that more and better pictures for family audiences, including children, will be produced.

The full text of the model ordinance, together with suggestions for procedure, will be sent without charge on receipt of an addressed, stamped envelope, by *The Parents' Magazine*, 114 East 42d Street, New York.

Cincinnati Waives Claim to $32,000,000,000,000 Payable in 2433

AN Associated Press dispatch dated December 27, from Cincinnati, Ohio, says:

"The city of Cincinnati today accepted $345,000 in cold cash on which it can lay its hands now in preference to an estimated $32,000,000,000,000 it might get at the expiration of 500 years.

"Miss Florence E. Weaver, former Cincinnati school teacher, left an estate of about $700,000 to the city, to be placed in trust for 500 years at compounded and recompounded interest. The real estate comprising the city's windfall is in Oklahoma City, and the bequest was ruled invalid by Oklahoma courts.

"Rather than argue the case through higher courts, John H. Ellis, City Solicitor, announced that he had reached an agreement with other heirs of Miss Weaver to accept half of the amount willed to Cincinnati."

The Municipal Bond Market

Recent sales of new issues, from December numbers of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$25,000,000	Pa., Emergency Relief	3.75	1-10 Ser.	3.72
264,000	Springfield, Mass., School Addition	4	10 1/3 Avg.	3.96
165,000	Carlisle, Pa., Sewage Disposal	4	18 1/3 Avg.	3.99
150,000	Manchester, N. H., Water	4	1-10 Ser.	3.99
70,000,000	New York City, Relief	4	1-10	4
1,500,000	S. Dak., Refunding	4	7 2/3 Avg.	4
1,250,000	Montana, Highway, Treasury Anticipation	4	5 Avg.	4
683,160	Cedar Rapids, Iowa, Sewer, Water	4	11 Avg.	4
293,000	Calif., Park	4.25	21 1/3 Avg.	4.15
107,000	Greenwich, Conn., Sewer	4.25	8¼ Avg.	4.15
5,000,000	New Jersey, Relief	4.25	1-8 Ser.	4.23
100,000	East Haven, Conn., Improvement	4.5	1-10 Ser.	4.37
450,000	Northampton Co., Pa., County	4.5	14½ Avg.	4.43
408,363	Hamilton Co., Ohio, Sewer	4.8 Avg.	11 Avg.	4.7 Avg.
100,000	Glens Falls, N. Y., Gen'l City	4.75	7 Avg.	4.74
110,000	Minneapolis, Minn., Relief	5	2-11 Ser.	4.91
500,000	Des Moines, Iowa, Improvement	5	10 1/3 Avg.	4.97
500,000	Minneapolis, Minn., Relief	5	2-11 Ser.	5
452,000	Toledo, Ohio, School, Refunding	5.6 Avg.	4½-8½ Opt. Avg.	5.6 Avg.
616,875	Long Beach, N. Y., Water	6	4-28 Ser.	6
109,000	Stark Co., Ohio, Refunding	6	6½ Avg.	6

TRAFFIC CONTROL AND FACILITATION

Conducted by Publications Committee, Institute of Traffic Engineers, 175 Fifth Ave., New York

Maxwell Halsey, Chairman, Harry Hemmings, Reyburn Hoffman, Benoit Laberge, Theodore T. McCroskey, Donald M. McNeil, A. J. Naquin, Hawley S. Simpson, Arthur C. Straetz, Peter J. Stupka, Lawrence S. Tuttle, John C. Wrighton

*New Traffic Signs Adopted by Amsterdam, Holland**

THE city of Amsterdam recently adopted new traffic signs after the patterns approved by the International Traffic Conference at Geneva in March, 1931.

Sign I means "No left turns." The arrow is black, the outer circle and the crossing line are red. The lettering, "Links af verboden," will be discontinued as soon as the public is familiar with the meaning of this sign.

Sign II means that no vehicle is permitted to stop during rush hours; viz., 8-9.30, 12-14 and 16-19. The sign is blue, the lettering is white, and the outer circle and cross are red.

Sign III means that horse-drawn vehicles and push-carts are prohibited during the hours 8-9.30 and 11.30-19. The symbols of these vehicles are black, the lettering is white and the other parts of the sign are red.

Sign IV means "No parking" during the whole day. Parking has the same meaning as in New York; viz., the standing or waiting on any roadway of any vehicle not actually engaged in taking up or setting down passengers or merchandise. The letter P (the Holland translation of "to park" is "parkeeren") is black and the outer circle and the crossing line are red.

The diameter of the signs is 2 feet. Traffic signs are not placed on stanchions—except in temporary cases—but attached conspicuously to lamp-poles or special posts on the curb in a uniform way; viz., 7 ft. 4 in. away from the street level.

—Submitted by LEO A. A. COHN, Inspector of Police, Amsterdam, Holland.

AMSTERDAM HAS ADOPTED THESE SYMBOLIC TRAFFIC SIGNS

* EDITORIAL NOTE.—This interesting development is in the direction of the greater use of symbols on traffic signs. The joint committee of the National Conference on Street and Highway Safety and the Association of State Highway Officials, now revising the sign and signal code, is seriously considering this general principle.

The Slow Traffic By-Pass Proposal

To the Editor of THE AMERICAN CITY:

The interesting suggestion of A. W. Robertson for facilitating traffic on two-lane highways, as outlined in your December issue (page 70), suggests certain questions which will no doubt be given careful consideration by highway engineers. The distinctive feature of Mr. Robertson's plan is the construction every few miles along two-lane highways of a short spur roadway which would enable slow-moving vehicles to travel to the right of the highway a distance sufficient to permit fast traffic behind them to pass.

In the first place, these turnouts will require careful judgment on the part of the engineer to determine where they can be advantageously used, how far apart they should be spaced to be of any value, and how long each one should be to allow the average accumulation of fast vehicles to pass a slow vehicle. To answer these questions satisfactorily requires a study for each project of (1) the volume of traffic; (2) frequency of congestion; (3) relative speeds of vehicles.

As advantages of the plan, I should list:

1. Relief of congestion without necessity and expense of entire widening.
2. High salvage value when complete widening is necessary.
3. Probability of more than usual requirements for hand labor.

As disadvantages:

1. Higher than normal unit costs entailed by construction of a number of discontinuous highway units.
2. Difficulties of educating drivers to use turnouts properly.
3. Necessity for gradual entrances and entrances to turnouts.
4. Danger introduced by the necessity for slow vehicles to enter the higher speed traffic stream at the end of each turnout.

My personal opinion is that the plan is not an economical one and that money could be more advantageously expended by complete improvement of a shorter mileage. I fail to see that there will be a large increase in employment under this plan over the normal methods of highway construction.

LAWRENCE S. TUTTLE,
U. S. Bureau of Public Roads, Washington, D. C.

Experimental Demonstration of Pedestrian-Vehicular Traffic Control Signals, New York City

EACH of the three interdependent and correlated factors in the traffic engineering problem—pedestrian traffic, vehicular traffic, and the controlling and directing agency—is given recognition in the new system of traffic control lights which was first tried out in New York City on December 21. Dr. John A. Harriss, former Special Deputy Police Commissioner, for eight years in charge of traffic regulation in New York City, was permitted by former Police Commis-

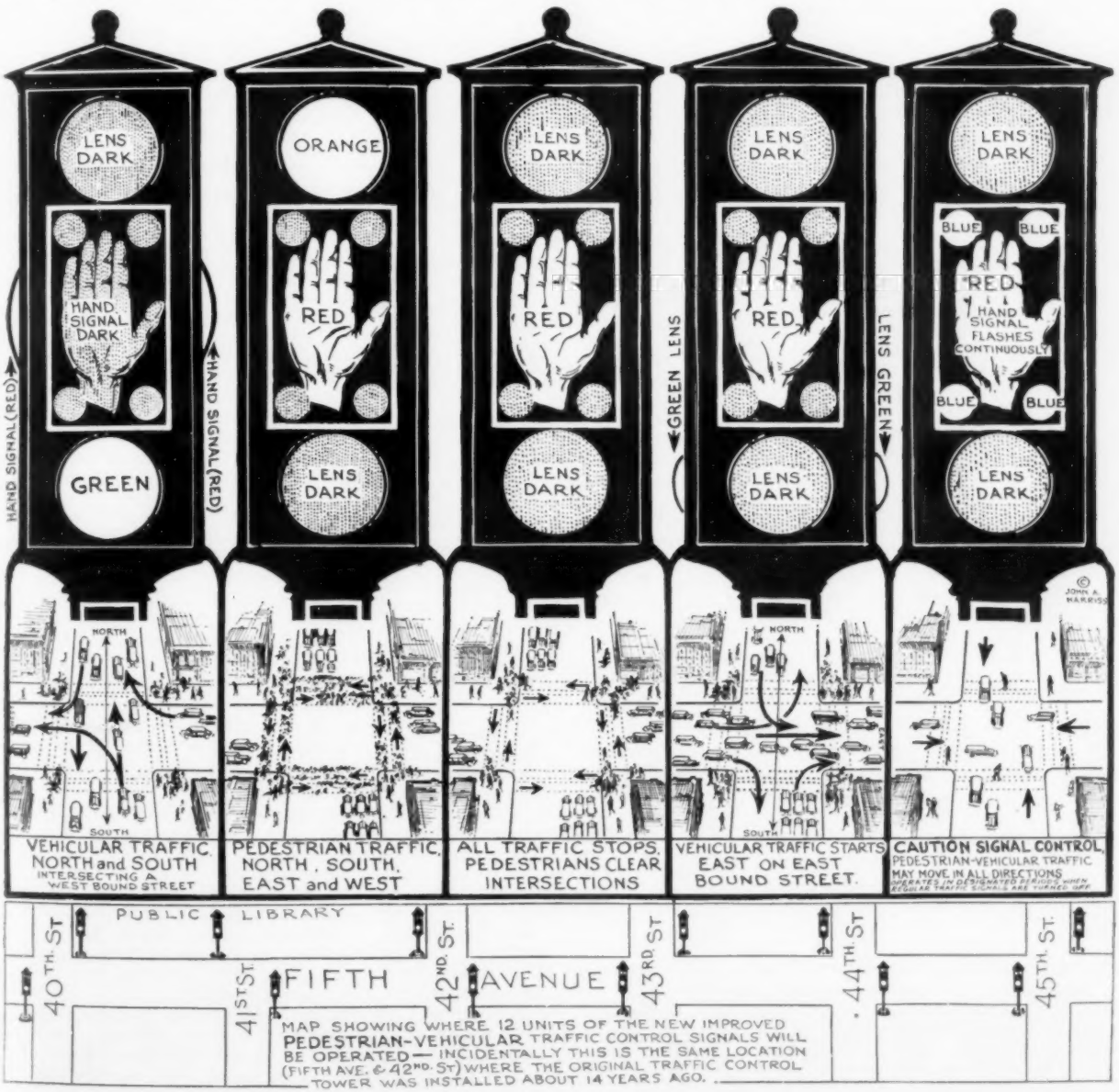
sioner James S. Bolan to make this experimental demonstration, using twelve units of the new pedestrian-vehicular signal control, on diagonally opposite corners on Fifth Avenue in the six blocks from 40th to 45th Street. The following paragraphs are based on a statement by Dr. Harriss as to the reasons for the experimental demonstration and what he hopes it will accomplish.

In New York's traffic control system, the round red lens has not performed its true function well, for today it appears simply to indicate danger—which may be expected of any red light; it may indicate DETOUR, and not mean definitely STOP. Drivers on corners where police are not stationed usually start when four red lights are showing and do not wait for the green light to face them.

In the new experimental system, the round red lens is replaced by a red hand, which, displayed for 20 seconds at the same time as a round amber lens above it, says, emphatically, STOP to motor traffic in all directions, allowing pedestrian traffic to move north, south, east and west; then, displayed in four directions for 5 seconds with no other light, says STAY STOPPED to all motorists, allowing pedestrians to clear the intersections. The red hand remains in its north and south position, while a round green lens below it shows east and west, permitting motor traffic on the cross streets for 30 seconds, followed by 5 seconds during which nothing moves; after which the red hand functions similarly facing east and west and the north-and-south green lenses allow motor traffic on the avenue, for 58 seconds; in the succeeding 2 seconds nothing moves; then come again the four-way free periods of 20 seconds and 5 seconds for pedestrians.

It is the use of the red hand, giving the clear impression of the actual hand of an officer, and enforcing obedience to the intermediate period when all motor traffic is halted and pedestrians have time to reach all opposite curbs, that provides the "absolute balance of give and take," which, if strictly adhered to, benefits both drivers and pedestrians. The position and shape of the red hand partially take care of color blindness. It is hoped that this system will do away with disputes between drivers and traffic policemen in which the driver complains that he did not see the raised hand of the officer. If obedience to the red hand is rigidly enforced, it will do away with the habitual offence of passing a STOP signal, "a dangerous practice," says Dr. Harriss, which "causes thousands of deaths and injuries annually."

There is also the "caution signal control," during which the red hand signal flashes continuously, within four small round blue lenses, and all other lenses are dark. This allows pedestrian-vehicular traffic to move in all directions. It is designed to operate in designated periods when regular traffic signals are turned off, and when caution is expected to insure safety.



MAP SHOWING WHERE 12 UNITS OF THE NEW IMPROVED PEDESTRIAN-VEHICULAR TRAFFIC CONTROL SIGNALS WILL BE OPERATED — INCIDENTALLY THIS IS THE SAME LOCATION (FIFTH AVE. & 42ND ST) WHERE THE ORIGINAL TRAFFIC CONTROL TOWER WAS INSTALLED ABOUT 14 YEARS AGO.

Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

ZONING and PLANNING NOTES

From Data collected by the Zoning Committee of New York (233 Broadway)

Plat—Dedication

ILLINOIS.—*Clokey v. Wabash Railway Co.* 187 N. E. 475 (Supreme Court, October 21, 1933).—At common law, and in the absence of a statute regulating the matter otherwise, the making and recording of a plat of land, and the selling of lots with reference to it, are only evidence of intention by the owner to dedicate the street in question; and in order to complete the dedication so as to create public rights in the street, the offer must be accepted. The acceptance of the dedication may be established by a formal act of the municipality, by its assumption of control of the land, or by public use of it for the purpose for which it was dedicated. Prior to its acceptance, the offer to dedicate may be revoked by the landowner, and is so revoked by any act by him inconsistent with it. The conveyance of the land, its enclosure so as to exclude the public, or the erection of a building upon it, is such an act.

Non-Conforming Use

KENTUCKY.—*A. L. Caruthers and Son v. City of Louisville*, 63 S. W. 2d, 493 (Court of Appeals, May 16, 1933—rehearing denied October 31, 1933).—The plaintiffs are constructing a grade A milk products business in an apartment zoning district as a non-conforming use. They were notified by the Health Department that they must make certain changes or cease to conduct their business with a grade A rating. Consequently, the plaintiffs applied for a permit for certain enlargements of their plant. The Building Inspector, and, on appeal, the Board of Appeals, refused to issue the permit, and on application to a lower court it sustained the Board of Appeals. (A synopsis of the opinion of that court will be found in our Notes for May, 1933.) The plaintiffs then appealed to this court.

The city introduced evidence tending to show that the operation of the plant is accompanied by objectionable noises. This court holds that this evidence is immaterial in this action, since it is not brought to require the cessation of the business, nor is it a prosecution to abate a nuisance. The enlargement of the plant, for which plaintiffs ask a permit, is not a structural alteration; and, besides, such alterations are allowed non-conforming uses "when," as in this case, "required by law or ordinance." Therefore, the refusal by the Board of Appeals to rule in favor of granting the permit asked for by the plaintiff was an abuse of its discretion.

Zoning Ordinance—Rear Lot Line

MASSACHUSETTS.—*Bianco v. City Engineer and Building Inspector of the City of North Adams; Texas Co., Intervenor* (Supreme Court, September 14, 1933), 187 N. E. 101.—The Texas Co. owns a lot on the southeast corner of Quincy and Ashland Streets, in the city of North Adams, facing about 58 feet on Quincy Street, and 142 feet on Ashland Street. Bianco owns an inside lot facing on Quincy Street alone. Bianco's lot is next to, and just west of, the Texas Co. lot. A city ordinance provides that no building shall be erected in the zoning district in which both these lots are located "so as to extend within less than 15 feet of the rear line."

The city has granted the Texas Co. a permit for an office building and filling station on its lot, extending within less than 15 feet of Bianco's line, on the representation of the Texas Co. that the proposed building fronts on Quincy Street. Bianco claims that the building fronts on Ashland Street, and asks for a revocation of the permit on the ground that the Texas Co. line coincident with his side line (and within 15 feet of which the Texas Co. building will extend) is the rear lot line of the Texas Co.

Prior to its purchase by the Texas Co. in 1931, the lot in question had been owned by one Whitaker. On it he had erected a house, in which he lived. This house fronted and was numbered on Quincy Street, but had a side entrance on Ashland Street and was also numbered on it. At this time, in the opinion of the Court, it is clear that the front line of the lot was on Quincy Street, the line on Ashland Street, and on Bianco's property, being side lines. Subsequently Whitaker tore down his house, and in 1930 he applied for and was granted a permit for a business building on this lot. Whitaker described the lot as numbered on Ashland Street, and filed plans of the building facing and having its exclusive entrance on that street, the building, however, to be less than 15 feet from the Bianco line; with a curb extending the entire length of the lot on Quincy Street, of such a size as to prevent the entrance of vehicles from that street. In 1931 Whitaker sold the lot to the Texas Co., and it applied for the permit, as granted it by the city.

The additional facts considered by the city in deciding that the Bianco line is not the rear line of the Texas Co. lot are set forth in the record of the case. They comprise the lines of the lot, its shape and dimensions; the history of the use of the lot for many years; the location and proposed uses of the buildings to be erected; the fire hazard; the circumstances that water mains, sewer pipes and gas mains enter the lot from Quincy Street, that the lot in question and the lots on the three other corners of Quincy and Ashland Streets were numbered and assessed on Quincy Street, that the uniform custom of engineers when dividing a tract of land into building lots is to arrange them with greater depths than frontage, that the division of this block of lots indicated that all were laid out as intended to face on either Quincy Street or Chestnut Street, and not Ashland Street, and that particular uses of premises may not be long continued and are subject to frequent changes.

The Court below found that the city in deciding that the Texas Co. lot fronted on Quincy Street made no error; and that decision the upper Court affirms. The determination of what is the rear lot line of a specified parcel of land is largely a question of fact, although partaking in some aspects of questions of law. In the first instance it was the duty of the city to make that determination. It involved primarily the exercise of sound judgment as applied to the particular neighborhood. Factors not necessarily competent in evidence might enter into the exercise of that judgment. In its judgment the city does not, to the Court, seem to have erred.

Interim Ordinance

TENNESSEE.—*State v. City of Nashville*, 60 S. W. 2d, 161 (Supreme Court, May 20, 1933).—Lichtman wished to construct a commercial building. His application for a permit was refused for the reason that such a use would be a violation of an ordinance adopted by the city as an emergency zoning measure pending the final report of the zoning commission and the enactment of a comprehensive zoning ordinance. The zoning act provided that the city council should have no authority to determine the boundary of any district or impose any regulations until after the final report of the Zoning Commission based upon public hearings. This act was passed in 1925. The city claimed the right to pass the interim ordinance on a private act of 1923 which granted the city the right to regulate the erection of buildings and provide for fire districts or zones and building zones. It is admitted that the requirements of the act of 1925 were not met.

The Court held that the earlier act was superseded by the later one, and that the city had no right to pass any zoning regulations without complying with the later act.

Garage—Use within Given Distance of Another Use

WISCONSIN.—*State ex rel. Newman v. Pagels, Building Inspector.* 250 N. W. 430 (Supreme Court, October 10, 1933).—A statute granting villages the power to regulate the storage of gunpowder and other dangerous materials is sufficient authority for villages to issue a regulation to prohibit the erection of a gasoline filling station within 500 feet of a residence or an existing filling station; and such a regulation is not unreasonable.

THE CITY'S LEGAL RIGHTS AND DUTIES

Conducted by A. L. H. STREET, Attorney at Law

Accidents

Pedestrian injured by depression between curb and sidewalk in daylight held not entitled to recover damages, having failed to watch his step (Louisiana Court of Appeal: *Glatstein v. City of Shreveport*, 149 So. 158).

City held liable for injury to employee due to cave-in of ditch (New Hampshire Supreme Court: *Maltais v. City of Concord*, 166 Atl. 267).

Local law authorizing compensation to bystander accidentally shot by police officer in pursuit of robbers held not invalid as gift of public funds to individual (New York Court of Appeals: *Evans v. Berry*, 186 N. E. 203).

Allegation that accident occurred on a sidewalk on "North Elm Street" held insufficient under statute requiring place to be specified, but was not fatally defective if city was not hampered in defending claim (Connecticut Supreme Court of Errors: *Greenberg v. City of Waterbury*, 167 Atl. 83).

Airports

Ordinance against leaving craft with motor running in absence of pilot and mechanic held reasonable and valid (Georgia Court of Appeals: *T. A. T. Flying Service v. Adamson*, 169 S. E. 851).

Drains

Unauthorized and unratified agreement that landowner granting easement to city would not be assessed for drain held invalid (New Jersey Court of Errors and Appeals: *Ballagh Realty Co., v. Borough of Dumont*, 166 Atl. 491).

Garbage Disposal

Where lowest garbage removal bidder failed to give bond, contract held legally awarded to another bidder who met price (Rhode Island Supreme Court: *Butera v. Ayotte*, 166 Atl. 820).

Libel

Charge that Councilman did not serve best interests of city and exercised poor judgment held not actionable criticism (California District Court of Appeal: *Taylor v. Lewis*, 22 Pac. 2d, 569).

Licenses

Power to tax "merchants" did not cover non-resident bakers delivering to customers from trucks (United States Circuit Court of Appeals, Eighth Circuit: *Cripe Baking Co. v. City of Bethany, Mo.*, 64 Fed. 2d, 755).

Ordinance fixing higher license tax against non-resident laundries, etc., than against local establishments held not unjustly discriminatory (Virginia Supreme Court of Appeals: *Richmond Linen Supply Co. v. City of Lynchburg*, 169 S. E. 554).

Municipal Utilities

Constitutional provisions for debt limits and referenda held to apply to extensions and improvements to existing water system, but not to creation of new system (Alabama Supreme Court: *In re Opinions of Justices*, 148 So. 111).

That a municipality needs but little gas for public use does not brand a projected plant as a private commercial enterprise because the surplus is to be sold to inhabitants (Kentucky Court of Appeals: *Reconstruction Finance Corporation v. City of Richmond*, 61 S. W. 2d, 631).

Contract to buy equipment for light plant, payable out of revenues, upheld (New York Court of Appeals: *Kelly v. Merry*, 186 N. E. 425).

Pensions

Policeman held entitled to retirement pension as being "permanently disabled" where his vision and hearing were impaired by injury in line of duty, although he could do desk work (New Jersey Supreme Court: *Simmons v. Policemen's Pension Commission of Borough of Deal*, 166 Atl. 925).

Public Utilities

Public Service Commission's gas rate order held invalid as being confiscatory (United States District Court, District of Kansas: *Wichita Gas Co. v. Public Service Commission*, 3 Fed. Supp. 722).

Railroad Aid

City held not entitled to injunction against cessation of use of railroad shops, etc., because of land grant, etc., to railway company, but entitled to injunction against removal of buildings (Ohio Supreme Court: *New York Central Railroad Co. v. City of Bucyrus*, 186 N. E. 450).

Salaries and Wages

Constitutional limitation on salaries of "public officers" held applicable to city manager (Kentucky Court of Appeals: *City of Lexington v. Thompson*, 61 S. W. 2d, 1002).

Laborer's acceptance of check for less than statute entitled him to held no bar to collecting balance due (Oregon Supreme Court: *Pederson v. City of Portland*, 24 Pac. 2d, 1031).

Official salaries held not subject to reduction for current term where officers had assumed duties the morning of the day when reduction was attempted by council (West Virginia Supreme Court of Appeals: *Zobrist v. City of Weston*, 170 S. E. 422).

Body raising funds to pay salaries held proper body to fix salaries in absence of contrary legislation (Pennsylvania Supreme Court: *Richardson v. City of Philadelphia*, 167 Atl. 573).

Sewage Disposal

Nearby property owners held entitled to enjoin operation of disposal plant in improper and offensive manner, but not to enjoin its establishment on mere apprehension of injury (Pennsylvania, Court of Common Pleas, Delaware County: *Warner v. Haverford Township*, 25 Pa. Munic. Law Rep. 20).

Street Assessments

Street assessments held not vitiated by failure to mail copies of ordinance, or to record notice that list was open to inspection, or to recite in ordinance that assessment did not exceed benefits, or to give notice of adjournment of meeting to hear objections, or because improvement of several streets was provided for in one proceeding (Alabama Supreme Court: *First National Bank of Dothan v. Fountain Motor Co.*, 148 So. 817).

Street Improvements

Electric company held not entitled to damages for expense of relocating conduits, etc., on change of street grade (Pennsylvania Supreme Court: *Philadelphia Electric Co. v. Commonwealth*, 166 Atl. 892).

Abutter held not entitled to enjoin erection of shelter over entrance to subway crossing under street (Wisconsin Supreme Court: *Randall v. City of Milwaukee*, 249 N. W. 73).

Long-continued encroachment upon street, as laid out but not used to its full width for street purposes, held not to enable abutter to prevent improvement to full width (Ohio Court of Appeals, Jefferson County: *Fleming v. City of Steubenville*, 184 N. E. 701).

Unemployment Relief

Ordinance for sale of public work bonds to liquidate unemployment relief scrip held invalid (Oregon Supreme Court: *Barde v. Funk, Auditor of City of Portland*, 24 Pac. 2d, 334).

Water Supply

City held liable in damages and subject to injunction for breach of covenant to maintain normal flow of stream below point of diversion, although city could condemn right to appropriate water (New York Supreme Court, Herkimer County: *Adirondack Power & Light Corp. v. City of Little Falls*, 265 N. Y. Supp. 567).

A CORRECTION

An item on page 75 of the December issue should have read:

Cost of street signs was payable out of street improvement bond funds (Texas Court of Civil Appeals: *Giles v. City of Houston*, 59 S. W. 2d, 208).

MUNICIPAL AND CIVIC PUBLICATIONS

Prices quoted do not include postage, unless so stated

Government and Administration

City Problems of 1933.—The Annual Proceedings of the United States Conference of Mayors. Editor, Paul V. Betters. Published by the Conference, Drexel Avenue and 58th Street, Chicago, Ill. 111 *pp.*

The annual meeting of the Conference here reported was held in Chicago September 22, 1933, for the specific purpose of considering a program through which the municipalities of the United States may take full advantage of the public works program of the Federal Government. The topics presented, and the speakers, were: Needed —New Municipal Revenues, Simeon E. Leland, Member Illinois Tax Commission; The Problem of Delinquent Property Taxes, Philip H. Cornick, Institute of Public Administration, New York City; The Municipal Credit Situation, Mayor T. Semmes Walmsley, New Orleans; The Municipal Default Problem, Congressman J. Mark Wilcox, Florida; Detroit's Experience, Acting Mayor John W. Smith, Detroit; City-County Consolidation in San Francisco, Mayor Angelo J. Rossi; Municipal Cooperation, Mayor Daniel W. Hoan, Milwaukee; The Cities and Relief, Harry L. Hopkins, Federal Relief Administrator; and Cities and the Public Works Program, Harold L. Ickes, Secretary of the Interior, and Administrator of Public Works.

Finance

In the series of broadcasts on The Crisis in Municipal Finance, given in the You and Your Government series, presented by the Committee on Civic Education by Radio of the National Advisory Council on Radio in Education and the American Political Science Association, the subject of "Pruning the City Budget" was presented, on November 28, 1933, by the following speakers: Harold S. Buttenheim, Editor, THE AMERICAN CITY; Peter Grimm, Chairman, Citizens Budget Commission of New York; and Harlow S. Person, Managing Director, Taylor Society. The discussion is published by the National Municipal League (309 E. 34th St., New York) in a 12-page pamphlet. "Economizing for the benefit, not the detriment, of society"; "pruning which regulates the growth and aims at balance," insuring "a higher standard of living through collective activities"; and "making reasonably sure that the resulting fruit will be consumed, not by mere owners of land or franchises or privileges, but by those who have contributed real labor and productive capital to the vineyard," are points in the discussion. Price, single copies, 15c; entire series, $2.50. (Apply to the National Municipal League.)

City Managers

The Supplement to the December, 1933, issue of the *National Municipal Review* consists of a report submitted by a committee of the League composed of Richard S. Childs, Chairman of the Council of the League, H. W. Dodds, President of Princeton University, and Thomas H. Reed, of the University of Michigan, entitled "Suggested Procedure for Selecting a City Manager." It covers: the duties and qualifications of a city manager; the procedure of a city council in seeking a manager; what the candidate wants to know about the city, its government, and the position; what the council wants to know about the candidates; the examination of applications, and the investigation of applicants, with personal interviews; and, finally, the methods of appointment. The forms involved in this procedure are given. 12 pp. (Apply to the League, 309 E. 34th St., New York.)

Food Sanitation

A 6-page pocket-size folder has been distributed by the Committee for the Study and Promotion of the Sanitary Dispensing of Food and Drinks, 450 Seventh Ave., New York, setting forth the aims and work of the Committee, in comments by individuals representing organizations actively engaged in furthering public health and sanitation. It also states certain safeguards for observance when eating or drinking in public places. (Apply to the Committee.)

Housing

The Rebuilding of Blighted Areas: A Study of the Neighborhood Unit in Replanning and Plot Assemblage.—By Clarence Arthur Perry, Russell Sage Foundation. Published by the Regional Plan Association, Inc., 400 Madison Avenue, New York. 59 quarto pp. Illustrated. $2.00.

The specific tract studied is in Winfield, Long Island, N. Y., a three-mile motor drive from Queensboro Bridge, and ten minutes from the Pennsylvania Station in New York City, a site typical of large areas in most cities. Five different plans are presented for mass reconstruction which would provide at moderate rentals an attractive, convenient neighborhood, with plenty of light and air, recreation space, and freedom from through traffic. Financial analyses of two of the plans are given—the preferred low-cost and high-cost schemes. Present difficulties in assembling the plot are stated, and the legal aspects of dealing with minority owners are discussed. Full credit is given in the Foreword to those who have cooperated in the preparation of this valuable publication.

"What Happened to 386 Families Who Were Compelled to Vacate Their Slum Dwellings to Make Way for a Large Housing Project" is the subject of a study conducted by Fred L. Lavenburg Foundation and Hamilton House, New York City, in 1933, which is set forth in a pamphlet of 12 pages. It covers a tabular analysis of the results to the former occupants of the "lung block" in lower New York, when it was destroyed to be replaced by a model housing development. The other questions involved are: Do these people move to better or worse sections of the city or do they move into adjoining blocks where the same kind of housing facilities is found? Is it a matter of choice or does the income determine this move? Where do the heads of these families work—near their homes or at a distance? (Apply to Abraham Goldfeld, Executive Director, Fred L. Lavenburg Foundation, 132 Goerck St., New York.)

Rutgers Town is a low-cost housing plan for the Lower East Side, New York City, a non-speculative, public limited-dividend project, to be built under the State Housing Law at a cost of $1,483 per room (including land and building, parks and playgrounds), and to rent for $6.00 to $12.50 a room. A 23-page mimeographed presentation of the project has been issued, including drawings and plans, by the Rutgers Town Corporation, of which Robert W. Aldrich Rodger is President. (Apply to the Corporation, 22 E. 40th St., New York.)

Libraries

In the Special Number (December 1, 1933) of the *Bulletin* of the American Library Association there is an 8-page survey of "Library Projects Under Public Works, Civil Works, and Relief Administrations." The various possible projects are classified, and the procedure for approval is explained, with reference to the difficulties that are due to differences in regulations in various states and municipalities. Definite undertakings are reported. A "Sample Outline of Adult Education Program" is given. "The important thing is that all of the projects and kinds of projects suggested in this *Bulletin* appear to be possible under some of the various relief and work administrations." (Apply to the Association, 520 N. Michigan Ave., Chicago, Ill.)

Taxation

"Tax Limits Prove Unwise," issued by the General Welfare Tax League, December, 1933, is the second issue of *Taxbits Bulletin*, and maintains the high standard of the preceding number. Recent tax-limiting legislation is analyzed and a table giving existing limits for all states of the country is included. Extremely valuable for any one concerned with municipal credit problems. 8 mimeographed pp. 25c. (Apply to the League, 309 E. 34th St., New York.)

Regional Planning

Town and Regional Development: A Guide to the Town and Country Planning Act, 1932.—By H. Chapman. J. M. Dent & Sons, Ltd., Aldine House, Bedford Street, London, W.C.2, England. 1933. *VIII* + 245 *pp.* 10*s.* 6*d. net.*

The opening chapter reviews the progress that has been made in town and regional development in Great Britain and emphasizes the need of a permanent national planning and development commission with full authority over all regional and town-planning authorities. It is followed by an outline of the Town and Country Planning Act, 1932, and then by several chapters setting forth the powers and duties under the Act, grouped conveniently under subjects, regardless of their order in the Act itself, and free from legal phraseology. The author is the Organizing Secretary of the International Federation for Housing and Town Planning.

Water Supply and Water Works

The Texas Water Works Short School was held in Temple, Texas, January 16-18, 1933, under the joint auspices of The Texas Section, Southwest Water Works Association, the Texas State Department of Health, and the city of Temple. The Proceedings of this school have been published in a pamphlet of 161 pages. Many papers, with discussion, are given on the various chemical and engineering elements of the field of water supply and water works. $1.00 plus postage. (Apply to Mrs. M. Pierson, Assistant Secretary-Treasurer, The Texas Section, Southwest Water Works Association, Austin, Texas.)

"Promiscuous Electric Grounding on Water Service Pipes and Mains" is a 16-page pamphlet reprint from the October, 1933, number of the *Journal of the American Water Works Association*, of a paper (with comments) by Nicholas S. Hill, Jr., consulting engineer, New York City; C. F. Meyerherm, of Albert F. Ganz, Inc., consulting engineers, New York City; and M. W. Cowles, Health Officer, Hackensack Water Co., New Milford, N. J. The authors recognize that electric current may produce corrosion or deterioration in pipes and water meters, and set up objectionable colors, odors and tastes in the water, which may become a serious operating and economic problem in some cases. (Apply to Mr. Hill, 112 E. 19th St., New York.)

Fire Prevention

Under the joint auspices of the New York State Conference of Mayors and the School of Citizenship and Public Affairs of Syracuse University, Publication No. 27 has been issued, with the title of "Fire Prevention Practices in New York State Municipalities." 1933. 72 pp. Tables; charts. The main divisions of the study are: Prevention—The Solution; Analysis and Extent of Fire Waste; A Study of Fire Causes; Legal Basis for Fire Prevention; Bureaus of Fire Prevention; Functions of Bureaus; Other Agencies of Fire Prevention. A valuable Summary of Conclusions and Recommendations forms the closing chapter. $1.00. (Apply to Bureau of Training and Research, New York State Conference of Mayors and Other Municipal Officials, Albany, N. Y.)

Forestry

"Major Problems and the Next Big Step in American Forestry" is a summary of a report prepared in response to Senate Resolution 175, by the Forest Service, U. S. Department of Agriculture. It is Separate No. 1 of Senate Document No. 12, "A National Plan for American Forestry," and contains the Table of Contents, Letters of Transmittal, and Introduction. "Is Forestry Justified?" is Separate No. 17 from the same Senate Document, the price of which is $1.75. The main recommendations of the report, as approaching a satisfactory solution of the forest problem, are: a large extension of public ownership of forest lands; and a more intensive management on all publicly owned lands. (Apply to the Superintendent of Documents, Washington, D. C.)

Asphalt Paving

The Asphalt Institute (801 Second Ave., New York) has published its Manual Number Four, entitled "Asphalt Block Construction." It contains 20 pages, with effective illustrations which add much to the value of the instruction given for the laying of asphalt block pavements. (Apply to the Institute.)

The Tenth Annual Asphalt Conference was held in New Orleans, La., December 5-9, 1932, under the auspices of The Asphalt Institute and the Association of Asphalt Paving Technologists, and is the most recent one held. The Institute has published the Proceedings of this Conference in an excellent paper-bound report of 349 pages. It contains the prepared papers only, omitting matter not essential to the study of the subjects presented. The typography is clear and attractive and the many illustrations are of definite value. The papers are arranged in subject groups: Part I—(1) Highway Economics, (2) Low Cost Highways, (3) Emulsified Asphalt Types, (4) Pavement Types, (5) Highway Equipment; Part II—the technical reports and papers of the Association of Asphalt Paving Technologists. (Apply to the Institute, 801 Second Ave., New York.)

Motor-Vehicle Accidents

Copies are available of the complete paper on "Effect of Signalization on Motor-Vehicle Accident Experience" which Arnold H. Vey, Traffic Engineer, New Jersey State Department of Motor Vehicles (Trenton, N. J.), presented at the recent meeting of the Institute of Traffic Engineers, held in Chicago. Excerpts from this paper were given in THE AMERICAN CITY for November (pp. 63, 64). 12 mimeographed pp., with diagrams. (Apply to the author.)

Fire Prevention

"Tests of Theatre-Proscenium Curtains," by Nolan D. Mitchell, was published in the October, 1933, issue of the Bureau of Standards *Journal of Research*, as Research Paper RP603. Two types of steel curtains, four asbestos cloth curtains, and several kinds of asbestos cloth, were subjected to fire tests, in order to determine what kinds of curtains would give the desired degree of protection to theater audiences. The procedure of the tests is given in great detail, and recommended requirements for curtain installations are formulated. 5c. (Apply to Superintendent of Documents, Washington, D. C.)

Taxation

The "Report on the Preparation of the Land Value Map of Westchester County, 1932-1933," by Wayne D. Heydecker, has been issued (October, 1933) in a booklet of 25 pages reproduced from typewritten sheets and line drawings, with a large folding insert giving replies received from 22 municipalities in Westchester County, N. Y., to eight questions on the subject of tax assessment. Mr. Heydecker is Director of the Emergency Work Bureau of the county. The Chairman of the Bureau is Carl H. Pforzheimer, who furnishes the Foreword. The Engineer in Charge is Patrick V. Ryan. Philip H. Cornick, of the Institute of Public Administration, is the Consultant. The preparation of the map has been a work relief project giving employment to engineers and other white collar workers, in anticipation of the work of the Committee on Equalization. The result is a base map which can be kept up to date each year at relatively small expense. (Apply to Albert C. Brower, Clerk, Committee on Equalization, Room 818, County Office Bldg., White Plains, N. Y.)

Recreation

The use of the new leisure time is made the main subject of the December, 1933, number of *Recreation*, in excerpts from newspaper articles that present various views of the situation, and in speeches by Nicholas Murray Butler, Newton D. Baker, and Matthew Woll. It is an enlivening collection of opinions, and presents a definite impression that people do not wish to have highbrows telling them what to do outside their working hours; but also offers many opportunities for individual choices in the use of leisure time. 25c. (Apply to the National Recreation Association, 315 Fourth Ave., New York.)

County Planning

Progress in Fairfield County, the "first planned county in New England," is again presented by the Fairfield County Planning Association, Inc., in the "Merritt Parkway Number," November, 1933. 12 quarto pp.; well illustrated. On the basis of "The design of the Merritt Parkway controls the future of Fairfield County," this report considers every aspect of the undertaking, and presents its conclusions convincingly. (Apply to the Association, Care Chamber of Commerce, Bridgeport, Conn.)

Other Reports Received

CHANUTE, KANS.—Annual Report and Budget, 1932-33. ("Tax free since 1930 through municipal ownership of utilities.") 28 pp.

PASADENA, CALIF.—Annual Report, Water Department, 1932-1933. 66 pp.

WILMINGTON, DEL.—Chief Engineer, Water Department, 1932-1933. 106 pp.

CONVENTIONS—WHEN AND WHERE

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

JANUARY 12-13.—WASHINGTON, D. C. (50)
American Engineering Council. Annual meeting. Executive Secretary, L. W. Wallace, 744 Jackson Place, Washington, D. C.

JANUARY 13.—PROVIDENCE, R. I.
Rhode Island Town and City Clerks' Association. Annual meeting. Secretary, Alice A. Tonge, Deputy Town Clerk, Town of Warwick, Apponaug, R. I.

JANUARY 15-17.—DALLAS, TEXAS.
Texas Water Works Short School. Annual session. Address: V. M. Ehlers, Secretary of the Southwest Water Works Association—Texas Section, Austin, Texas.

JANUARY 17-19.—NEW YORK.
American Society of Civil Engineers. Annual meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

JANUARY 18.—NEWARK, N. J.
Eastern Safety Conference. Manager, Fred M. Rosseland, 24 Branford Place, Newark, N. J.

JANUARY 22-25.—CHICAGO, ILL.
American Road Builders' Association. Annual meeting. Engineer-Director, Charles M. Upham, 938 National Press Building, Washington, D. C.

JANUARY 22-26.—LAFAYETTE, IND. (600)
Purdue Road School. Address: Professor Ben H. Petty, Engineering Extension Department, Purdue University, Lafayette, Ind.

JANUARY 23-26.—NEW YORK.
American Institute of Electrical Engineers. Annual winter convention. Assistant National Secretary, H. H. Henline, 33 West 39th Street, New York.

JANUARY 29-31.—WASHINGTON, D. C. (50)
American Society of Landscape Architects, Inc. Annual meeting. Executive Secretary, Bradford Williams, 9 Park Street, Boston, Mass.

JANUARY 29-31.—WASHINGTON, D. C. (500)
Associated General Contractors of America, Inc. Annual convention. Managing Director, E. J. Harding, 222 Munsey Building, Washington, D. C.

JANUARY 29-31.—WILKES-BARRE, PA. (250)
Pennsylvania State Association of Township Commissioners. Annual convention. Secretary-Treasurer, H. A. Fritschman, Eagle and Darby Roads, Upper Darby, Pa.

FEBRUARY 5-8.—NEW YORK. (200)
American Society of Heating and Ventilating Engineers. Annual meeting. Secretary, A. V. Hutchinson, 51 Madison Avenue, New York.

FEBRUARY 8.—BOSTON, MASS. (100)
Massachusetts Highway Association. Secretary, John W. McCarthy, 318 State House, Boston, Mass.

FEBRUARY 13-15.—ANN ARBOR, MICH. (600)
Conference on Highway Engineering—University of Michigan. Annual convention. Secretary, R. E. Morrison, Ann Arbor, Mich.

FEBRUARY 14-16.—ATLANTIC CITY, N. J. (1,000)
Association of Highway Officials of North Atlantic States. Annual convention. Secretary-Treasurer, A. Lee Grover, Secretary, State Highway Commission of New Jersey, Trenton, N. J.

FEBRUARY 19-22.—CHICAGO, ILL. (250)
National School Supply Association. Annual convention. Executive Secretary, J. W. McClinton, 176 West Adams Street, Chicago, Ill.

FEBRUARY 20-22.—TORONTO, ONT. (300)
American Concrete Institute. Annual convention. Secretary, Harvey Whipple, 641 New Center Building, Detroit, Mich.

FEBRUARY 24—MARCH 1.—CLEVELAND, OHIO. (10,000)
National Education Association—Department of Superintendence. Annual meeting. Executive Secretary, Sherwood D. Shankland, 1201 16th Street, N. W., Washington, D. C.

MARCH 1-3.—KNOXVILLE, TENN. (100)
American Water Works Association—Kentucky-Tennessee Section. Annual meeting. Executive Secretary, F. C. Dugan, 532 West Main Street, Louisville, Ky.

MARCH 7-9.—REGINA, SASK. (600)
Saskatchewan Association of Rural Municipalities. Annual convention. Secretary, J. J. McGurran, 407 Kerr Building, Regina, Sask.

APRIL — .—AUGUSTA, GA.
American Water Works Association—Southeastern Section. Annual meeting. Secretary-Treasurer, W. H. Weir, 4 Capitol Square, S. W., Atlanta, Ga.

APRIL 2-6.—LOS ANGELES, CALIF. (400)
School of Citizenship and Public Administration—University of Southern California. Annual Institute of Government. Executive Secretary, Walter E. Sykes, University Park, Los Angeles, Calif.

APRIL 4-6.—TORONTO, ONT. (300)
American Water Works Association—Canadian Section. Annual meeting. Secretary-Treasurer, A. E. Berry, Ontario Department of Health, Parliament Buildings, Toronto, 5, Ont.

APRIL 20-21.—BILLINGS, MONT. (50)
American Water Works Association—Montana Section. Annual meeting. Secretary, Herbert B. Foote, State Board of Health, Helena, Mont.

APRIL 30—MAY 1.—BOSTON, MASS.
New England Safety Conference. Secretary, Lewis E. MacBrayne, 6 Beacon Street, Boston, Mass.

JUNE 4-8.—NEW YORK. (1,200)
American Water Works Association. Annual convention. Secretary, Beekman C. Little, 29 West 39th Street, New York.

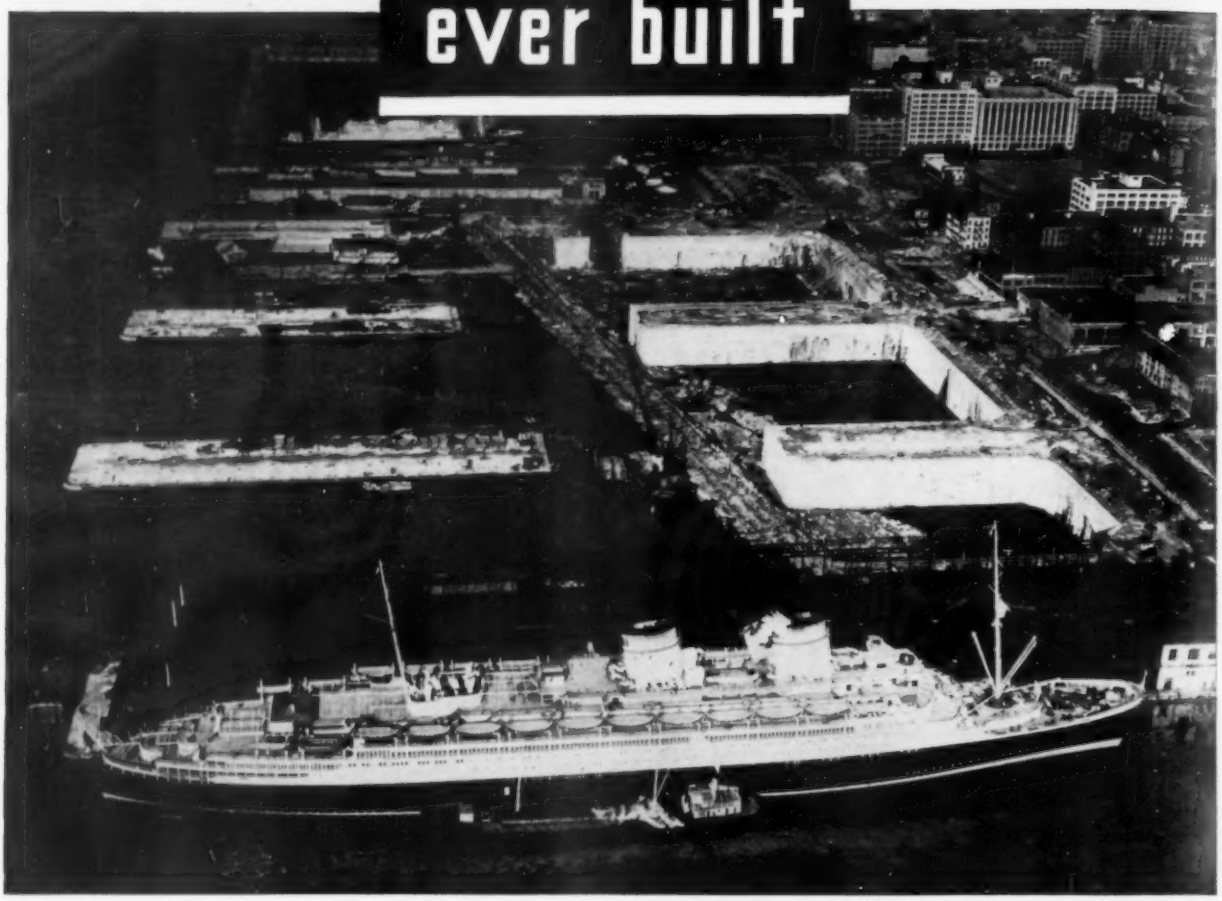
JUNE 14-15.—GREEN BAY, WIS.
League of Wisconsin Municipalities. Annual convention. Secretary, Frederick MacMillin, 114 North Carroll Street, Madison, Wis.

AUGUST 23-24.—WHEELING, W. VA. (150)
American Water Works Association—Central States Section. Annual convention. Secretary, H. L. Nelson, 2435 Koppers Bldg., Pittsburgh, Pa.

SEPTEMBER 3-6.—PASADENA, CALIF.
American Public Health Association. Annual meeting. Acting Executive Secretary, Dr. Kendall Emerson, 450 Seventh Avenue, New York.

SEPTEMBER 17-19.—SANTE FE, N. MEX. (100)
American Water Works Association—Rocky Mountain Section. Annual meeting. Secretary-Treasurer, B. V. Howe, 437 State Office Building, Denver, Colo.

The Largest Cellular Cofferdam ever built



Contractor: Allen N. Spooner and Son, Inc.; Consulting Engineer: H. A. Sloane. Photograph from Wide World

THIS 1500 ft. x 300 ft. cellular cofferdam, the largest ever built, was used in the construction of three piers in the Hudson River at New York City. It consisted of 43 pockets, filled with earth material, and extended from between 46th and 47th Streets to 52nd Street.

The cofferdam was built of 15-in. x ⅜-in. straight-web Bethlehem Steel Sheet Piling. About 7500 tons were required, in lengths ranging from 46 ft. to 96 ft.—the latter the longest unspliced length of sheet piling ever used.

As the cofferdam was unwatered, the rock in the basins between the piers was excavated in the dry to a depth of 46 ft. below mean low tide, or 54 ft. below maximum high tide. The concrete portions of the piers were constructed, resting on solid rock, and the timber foundations were built for the outer portions of the piers.

Following removal of the steel piling, the outer, timber piers will be extended shoreward to meet the concrete portions. The finished piers will be 1100 ft. x 125 ft.

Any job, large or small, that involves the retaining of earth or water is a job for Bethlehem Piling. Our engineers, experienced in the application of this piling to a wide range of problems, will gladly confer with you regarding any project you may be planning.

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BETHLEHEM STEEL SHEET PILING

NEWS AND ILLUSTRATIONS

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

A Highway Striping Outfit

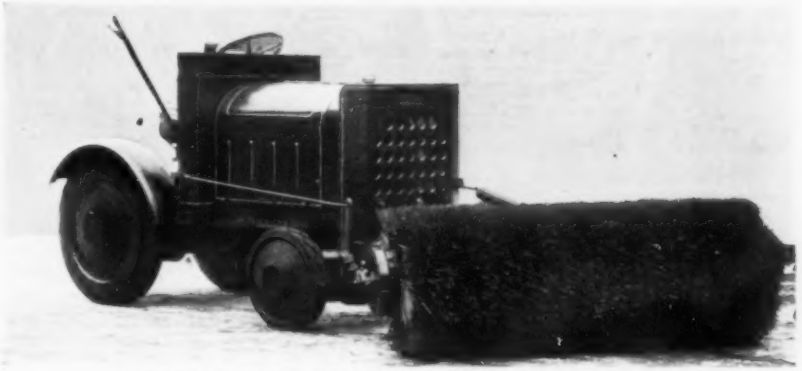
Spray-painting of traffic lines on public highways and city streets is increasing in frequency. With the spray process a uniform, well-coated stripe is laid down much faster and better than is possible with the hand brush method. In addition to cutting painting costs, closed traffic lanes are reopened to the public several hours sooner than was formerly possible.

The DeVilbiss Highway Striping Outfit Type HS, made by the DeVilbiss Co., Toledo, Ohio, lays a stripe at a speed of from 6 to 8 miles an hour. About 7 gallons of paint are used for each mile of striping, depending upon the kind of material used, the thickness of coating desired, and the surface of the pavement. The outfit can be attached to either the right- or the left-hand running-board of a motor truck or can be used as a trailer from the rear of a truck. While it is substantially built for its purpose, it is light enough for one-man handling in loading and unloading and attaching to a truck. A special toggle type joint with spring tension frees the striping outfit from truck jars. Road jars are absorbed by the rubber tires on the equipment.

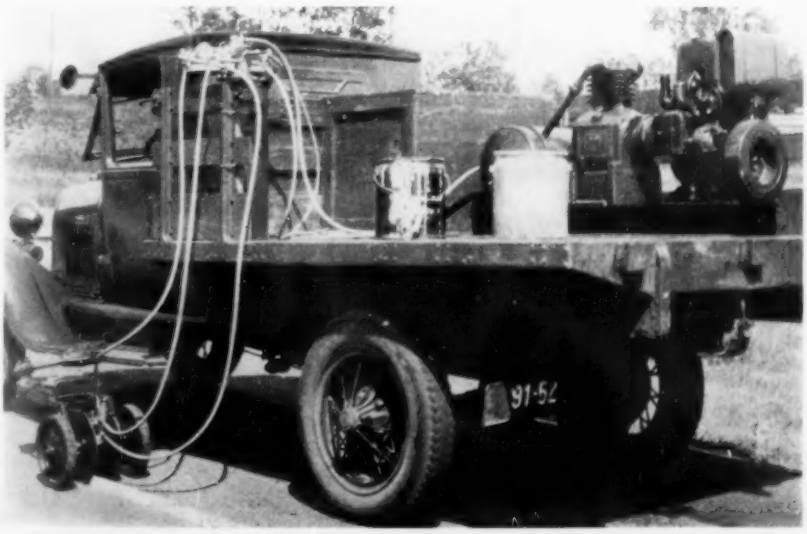
The running-board type striper is fastened to the truck by a clamping arrangement which also holds the horizontal drawbar in position. The design of the equipment permits of adjustment for various heights of running-boards. The operation of the striper does not obstruct traffic. In intermittent striping, or in going from one job to another, the outfit can be lifted from the road by chain or rope from the operator's position on the truck, thus permitting the driving of the truck at greater speed between jobs.

The trailer type striper is similar to the running-board type, except that it has a vertical drawbar and bracket with clamping arrangement to clamp the drawbar at various heights. The bracket is bolted to the truck floor. The bracket adjustment permits of fastening and holding the striper in a level position on trucks of different heights.

The automatic spray gun is mounted on an arm between two metal discs. These discs insure a uniform stripe, and are adjustable from a 4-inch to a 6-inch width. The spray-gun arm can be swung in a horizontal position or taken out if necessary for adjustment or cleaning of the spray gun. The discs are kept free from paint accumulation by a set of self-adjusting scrapers. The excess paint is deposited in the drip pan and can be strained and used again in the paint tank, or for hand painting at intersections. The spray gun is operated by a hand control valve.



A SIDEWALK SNOW BROOM THAT ALSO HANDLES SLUSH AT STREET INTERSECTIONS



THE DeVILBISS RUNNING BOARD TYPE TRAFFIC STRIPE SPRAY OUTFIT IN OPERATION

A Revolving Snow and Slush Broom

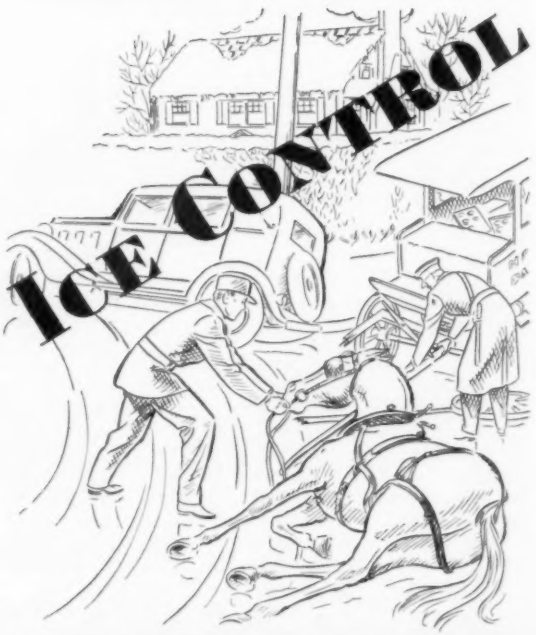
A revolving broom unit, driven from the power take-off of an industrial tractor, making an effective mobile machine for general cleaning, snow sweeping, and removing slush at street intersections to prevent the formation of ice, has been developed by the Mercury Manufacturing Co., 4118 South Halsted Street, Chicago, Ill. The tractor for this unit is the standard Mercury Type "D" industrial tractor, powered with a Ford Model A industrial engine and equipped with a Mercury balanced internal gear drive axle.

The standard 6-foot broom is mounted on an angle to sweep a 5½-foot path. The position of the brush may be adjusted, permitting the brush to rise, but to prevent digging into the ground. An enclosed roller chain drive operates the broom from the power take-off. The broom is built up of 90 pounds of high-grade split bamboo, and is provided with driving sprockets at either end, so that the broom may be reversed from time to time to equalize the wear on the bristles. The broom unit is detachable, and the tractor may be used for a variety of general utility operations at other seasons of the year.

Fenner Elected Vice-President of Mack

David C. Fenner, for fourteen years Manager, Public Works Department, Mack-International Motor Truck Corporation, has been elected Vice-President of that corporation. Among his many activities in the interest of the motor-truck industry, he is Chairman of the Motor Vehicle Conference Committee, member of the Legislative Committee of the National Automobile Chamber of Commerce, Director of the New York Motor Truck Association, and Vice-President and Director of the Automobile Merchants Association of New York, and has been prominent in public relations and legislative work.

. . . But don't overlook this fourth major factor toward Public Safety:



THE responsibilities of municipal management are not fully met unless streets are at all times kept open and safe. Freezing blizzards sometimes descend with ruthless suddenness and severity. Icy grades, curves and crossings are a menace almost as serious as pestilence, conflagrations or rampant crime. Through impassability or traffic mishap they can halt a doctor's urgent call; delay response to a fire alarm; threaten child health by preventing milk deliveries; cause grievous human injury; interfere with dozens of other vital functions in the life and progress of a community.

Is your Highway Department prepared? Are its facilities for ice control shipshape for instant call? Are its stock piles of sand or cinders quickly haulable and spreadable? Or will emergency find them frozen solid or into useless lumps?

There's nothing like Calcium Chloride for making ice control quick, certain and effective. Stock piles treated with Calcium Chloride — either in flake form or solution — are non-freezing; and when the mixture is applied to icy pavements, the Calcium Chloride not only prevents the material from blowing away, but melts the grit into the ice to form a gripping hold for wheels and hoofs.

Calcium Chloride costs little. And in the results it achieves — toward preventing accidents and keeping dangerous highway spots or stretches open — it is virtually priceless! As little as 200 pounds per 2½ cubic yards of grit material will do a splendid job.

For pamphlets and other information on the use of Calcium Chloride for ice control, write to any of the following members of this organization:—

CALCIUM CHLORIDE ASSOCIATION

SOLVAY SALES CORPORATION . . 61 Broadway, New York City
THE DOW CHEMICAL COMPANY . . . . Midland, Michigan
THE COLUMBIA ALKALI CORPORATION . . Barberton, Ohio
MICHIGAN ALKALI COMPANY . . 10 E. 40th St., New York City

CALCIUM CHLORIDE

★ *for better ice control*

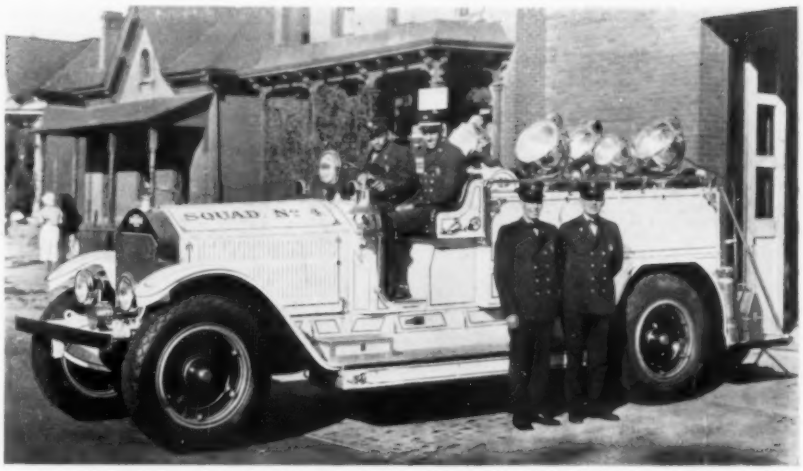
A Fire-Alarm Unit for Schools, Hospitals and Institutions

A new fire-alarm unit of the appliance type, known as the Gamewell Vitalarm signal, which can be readily installed by the average householder by screwing it into an electric light socket as one would attach an electric light bulb, has been announced by the Gamewell Co., Newton, Mass. The Vitalarm can be used as an individual signal, inasmuch as each one consists of a detector and howler unit combined; or several can be hooked up together and connected to an annunciator and loud warning bell, horn or fire-alarm unit inside or outside a large piece of property.

This signal provides the two best-known principles of automatic fire alarm, which are seldom found together even on expensive installations in large properties: (1) the "rate of rise" thermostatic principle for speed in detecting a fire; and (2) the "fixed" thermostatic principle for absolute assurance that the fire will be detected under any condition. A sustained rise of 15 to 20 degrees Fahrenheit a minute for one or two minutes in the room which the Vitalarm signal is protecting will instantaneously be detected and an alarm sounded automatically by the Vitalarm signal. This will occur regardless of the room temperature at the start of the fire, at 10 degrees below zero, zero, 32 degrees, or 100 degrees F. The "rate of rise" works equally fast without waiting until the temperature reaches a very high point and the fire is well under way, which is the case with most other appliance type automatic fire-alarm units. This feature is provided by means of a small air expansion chamber having a very sensitive diaphragm which bellows out when the temperature rises within the air chamber, causing an electrical contact to close, thus sounding an intermittent howler that unmistakably shrieks FIRE.

The second feature, known as the "fixed" thermostatic principle of fire protection, is extremely positive in its action and, although rarely ever should it be called upon to do so, acts as a monitor over the "rate of rise" feature. It consists of a permanent or fixed bimetallic thermostat set at 150 degrees F. which will actuate the signal, sounding its usual warning, should by any chance the temperature rise at a rate of less than 15 to 20 degrees F. a minute until it reaches 150 degrees F. from a slow, smouldering fire of unusual nature. No parts need be renewed after each operation, since both the "fixed" and "rate of rise" thermostats in the Vitalarm signal automatically reset themselves.

A small neon type lamp, consuming less than 0.4-watt and costing less than 3 cents a month to operate, glows constantly, marking the location of the Vitalarm signal and indicating that it is in operating condition. Where two or more Vitalarm signals are located in a room such as a store or warehouse, the flashing of this lamp would indicate at a glance which unit is operating for a fire. This will normally glow for thousands of hours and will gradually blacken and grow dimmer instead of burning out suddenly as do filament lamps. It should be replaced only by a neon type glow lamp—lamps of other types will not function. A burned-out lamp will not prevent the Vitalarm signal from operating for fire.



AN AMERICAN-LA FRANCE TYPE 75 RESCUE AND SALVAGE SQUAD AUTOMOBILE IN THE SERVICE OF THE DENVER, COLO., FIRE DEPARTMENT

The equipment includes six General Electric floodlights: two with clear lens and four with two types of 40-degree spread clear lens; the floodlights are all chromium plated externally and the power is supplied by a 3.5-kw direct-current generator driven by the truck motor

Applying Water-Works Chemicals in Proportion to the Flow of Water

The development of a chemical injector for applying chemicals to overcome severe plant and animal organisms in domestic water supplies has been announced by the Wade Automatic Chemical Injector Co., P. O. Box 165 Arcade Annex, Los Angeles, Calif. This injector provides for the uniform application of chemicals in proportion to the volume of flow of water. The machine is filled with dry chemicals, and a controlled flow of water automatically dissolves the chemicals into a saturated solution, which is injected into the water flow in either the pressure pipe line or an open ditch. The complete intermixing of the chemical with the incoming water eliminates high concentration at any point, furnishing a uniform dosage and even distribution.

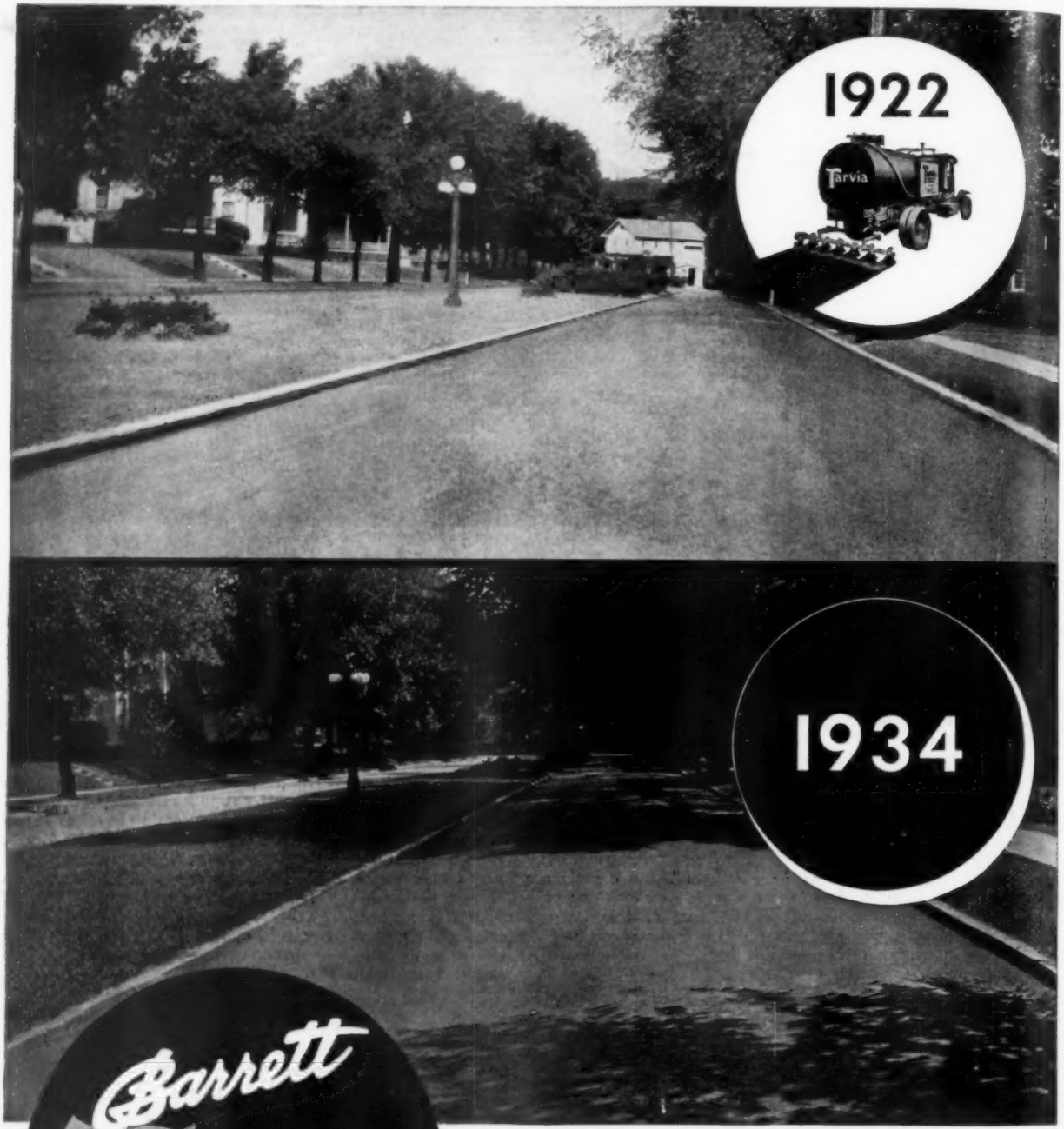
The injector is constructed of materials especially developed for the service and is fitted with chromium-plated fittings to prevent corrosion. Chemicals commonly handled by the Wade automatic injector include copper sulphate, ammonium sulphate, ammonium nitrate and aluminum sulphate. A built-in hydrometer accurately registers the strength of the injected solution.

In several installations made in southern California considerable saving in the use of chemicals has been effected. One of the first units was installed at the Buena Vista reservoir in Elysian Park, Los Angeles, where a prolific growth of a plant known as Potamogeton Crispus L., algae and water snails made frequent cleaning of the reservoir necessary and expensive. Within thirty days after the

USING AN ANGLEDOZER FOR CLEARING SNOW FROM A PACIFIC COAST MOUNTAIN HIGHWAY

Adjustment of the blade with either the toe or heel high or low makes it possible to use this product of R. G. Le Tourneau, Inc., Stockton, Calif., for working close to a crowned road

Franklin Place, Rockford, Ill., was Tarvia-built in 1922. Top photo was taken shortly after construction; lower photo shows condition of the road today. Twelve years of service—and an enduring asset to the community.



Barrett
Tarvia
GOOD ROADS
AT LOW COST

Tarvia qualifies for all types of emergency highway work authorized by the Federal Government. Whether it is a back country route to surface or widen, or a new modern, skid-safe trunk-line highway to build or maintain there is a right type and right price Tarvia for the job. Tarvia construction and maintenance are speedy and inexpensive, and local labor and materials may be used. Ask the Tarvia field man.

Meet us at Booth 136, Annual Meeting of American Road Builders Association, Stevens Hotel, Chicago, January 22-25, 1934.

THE BARRETT COMPANY New York Chicago Philadelphia St. Louis Minneapolis Hartford Detroit Cleveland Boston Buffalo Columbus Milwaukee Providence Syracuse Birmingham Lebanon Toledo Cincinnati Baltimore Youngstown Bethlehem Rochester Portland, Me. THE BARRETT COMPANY, LTD., Montreal Toronto Winnipeg Vancouver

Mention THE AMERICAN CITY—it helps.

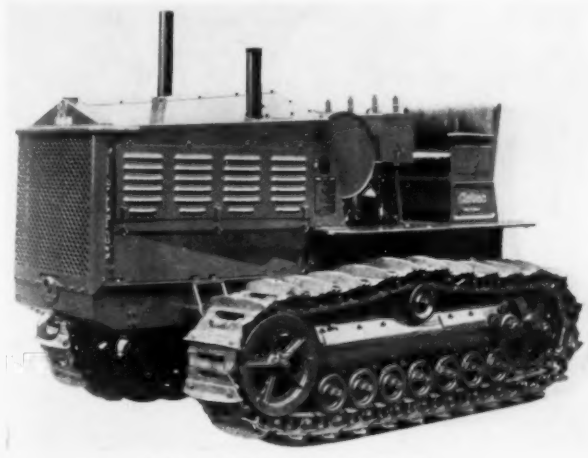
copper sulphate treatment had been started, using the Wade process, all plant life and water snails had been destroyed, although the dosage never exceeded 1 ppm. Additional installations have been made for the city of Inglewood, Calif., for Palos Verdes Water Co., Palos Verdes, Calif., and for several private water users in southern California.

A New Diesel Crawler Tractor in the 85-Hp Class

A diesel crawler tractor in the 80-hp class which develops 85 hp in second gear has been announced by the Cleveland Tractor Co., Cleveland, Ohio. Other than the engine, the Cletrac diesel has the same specifications as the gasoline-powered Cletrac 80.

The heavy weight per horsepower of diesel engines has been one of the chief conditions which have retarded their use as power units for tractors, but this objection has been largely overcome in the Cletrac diesel. The development of a satisfactory starting device has always been a problem which handicapped the use of diesel engines for mobile power units. The high compression of diesel engines when compared to gasoline engines had in the past made it practically impossible to use the conventional type of starting equipment. Starting the Cletrac 80 diesel is as easy as starting the Cletrac 80 gasoline tractor, for electrical equipment of ample capacity is standard on the diesel. Another advantage of electrical equipment of this type is that it permits the installation of lights at minimum expense.

Wherever possible, the features of the Cletrac 80 gasoline engine have been incorporated in the diesel engine. For example, the underhung crankshaft and the through bolts which pass through the cylinder heads, block, crankcase and main bearing caps so that all vertical stresses are transferred from the cylinder heads directly to the crankcase, have been included as features in the Cletrac diesel engine. A Bosch fuel distributing pump and fuel pump are used. The fuel delivery tubes lead from the pump to the nozzles on the left side of the engine.



THE NEW CLETRAC DIESEL 80

A New Pipe-Line Plow

A plow designed especially to facilitate the laying of oil and gasolines, and also applicable to any shallow pipe laying job, is manufactured by R. G. Le Tourneau, Inc., Wilson Way at Roosevelt, Stockton, Calif. This pipe-line plow consists of two plowshares, both throwing furrows to the center, an elevating moldboard, and a side wing or blade for disposing of the earth, the whole mounted on a wheeled frame in such a manner that the depth of the furrow taken can be controlled by a cable from the Le Tourneau power control unit mounted on the tractor which draws the plow.

This new tool will dig a 30-inch trench in three cuts, depositing the earth taken out about 6 feet to the right of the center line in an easy position for backfilling with a bulldozer or by hand. The positions require frequent priming, the genwing can be controlled independent of the plowshares. The plow leaves the side walls straight and unbroken and is readily handled by a 75-hp tractor in high gear.

LE TOURNEAU PIPE LINE PLOW

Self-Priming Centrifugal Pumps for Handling Clear Liquids, Trash and Sewage

The advantages of centrifugal pumps are so well known that they need no mention except to point out that with many pumping installations, where the conditions require frequent priming, the general type of centrifugal pump cannot be conveniently used. To meet such conditions, Ames Pump Co., Inc., 30 Church Street, New York, has developed several types of self-priming centrifugal pumps, each type having its own field of usefulness. The absence of extra moving mechanical parts makes for simplicity without affecting the rugged design of the Ames centrifugal pump. This feature of one moving element is not new in self-priming pumps, but the problem has been to effect the efficiency of a good non-priming pump.

By using the wet vacuum principle with a suitable controlling device, self-priming is accomplished in this line of pumps. A small quantity of liquid is pumped to the entrance of the impeller, which establishes a maintained liquid seal. Priming is accomplished without the need of a foot valve by utilizing the liquid at the suction inlet of the impeller entraining all air from the suction line. The entrained air is then discharged with the liquid into an air separator, where air rises to the top of the separator, while the liquid, free from air, returns to the suction entrance to complete the cycle and entrain additional air. This process continues until sufficient air has been removed from the suction pipe to fully prime the pump. After priming, the main pump begins its operation, the expansion tank serving as an enlarged section of the discharge line. The Ames principle allows for control by adjusting the priming regulator to any degree between wide open and complete shut-off.

It is apparent that with a priming pump which allows some of the liquid, after passing through the impeller, to be returned to the impeller, a power loss will be the result, because of the work required to re-pump liquid which has already been pumped. It is of importance that the quantity being recirculated be reduced to a minimum. It is apparent that with a fixed opening for this purpose a larger quantity will be returned at a high suction lift or discharge head than at a low lift or discharge head, which means that if the opening is of proper size for quick priming at low lift, it may be too large for economical operation at high lift. The regulator on Ames pumps may be adjusted by the operator to obtain the best possible results with the existing pumping conditions.

Ames automatic priming pumps are made in several classes; AMV and AHV are the trash-handling types designed to economically meet the problems of pumping sewage, waste and trash, and any liquids containing large percentages of solids.

Zack Joins Filtration Equipment Corporation Staff

S. I. Zack, Assoc. M. Am. Soc. C. E., for ten years in the Engineering Department of the Sanitary District of Chicago has joined the staff of the Filtration Equipment Corporation, 350 Madison Avenue, New York.

EARSHOT *extends its range...*

... via Public Address System

Everyone in the crowd hears clearly—when Western Electric equipment picks up, amplifies and distributes the speaker's words. Municipalities find this System valuable on many occasions—at political rallies, public hearings, athletic events, park concerts and holiday celebrations.

Either indoors or out, Public Address apparatus reproduces speech or music with utmost fidelity. Volume may be controlled as desired—one or many loudspeakers may be used as needed.

Western Electric—maker of Bell Telephones—produces each Public Address System to order, to fit a specific installation. In this way only, is it possible to assure adequate coverage with volume and quality scientifically predetermined. The cost of the equipment is reasonable, maintenance expense small—Western Electric standards of workmanship and materials always.

NRA WE DO OUR PART

GRAYBAR ELECTRIC CO. AC1-34
Graybar Building, New York, N. Y.
Gentlemen: Please send us illustrated booklet on the Public Address and Program Distribution Systems.

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Western Electric

PUBLIC ADDRESS AND PROGRAM DISTRIBUTION SYSTEMS

Distributed by GRAYBAR *Electric Company*

A 2,000,000-GALLON ELEVATED STEEL TANK OF CLASSIC SIMPLICITY FURNISHED TO THE CITY OF DES MOINES, IOWA, BY GRAVER TANK & MFG. CORP., EAST CHICAGO, IND.

Littleford A. R. B. A. Exhibit

Littleford Bros., 500 E. Pearl St., Cincinnati, Ohio, will exhibit in Booth 71 at the American Road Builders' Association convention at the Stevens Hotel, Chicago, January 22-26. Larry Glaser, Sales Manager, will be on hand with a comprehensive display of photographs of the Littleford pressure distributor and literature on bituminous road maintenance equipment.

A Non-Clogging Sewage Nozzle

Trickling filters are one of the standard units for the treatment of settled sewage. In spite of careful screening of the effluent from sewage filters, there has always been a certain amount of inequal distribution of the sewage over the surface of the trickling filter due to clogging of the sprinkler nozzle. The Fayar Corporation, 39 Cannon Street, Poughkeepsie, N. Y., has announced the Fayar non-clog sewage nozzle, so constructed that the sewage has a free unobstructed outlet until it actually strikes the deflector. The sewage orifice is in the center of the deflector base, and the deflector unit is attached at the side and, as shown in the illustration, is surmounted by a top deflector plate which further breaks up the spray.

A FAYAR SPRINKLING NOZZLE AND HALF SPRAY DEFLECTOR UNIT

Sectional Plate Pipe for Flood Control Projects

An order for 2,460 lineal feet of Toncan Sectional plate pipe, 10 feet in diameter, has been placed with The Tri-State Culvert Manufacturing Co., Memphis, Tenn., and Atlanta, Ga., for use on the Lake Okeechobee flood control project in Florida. C. Y. Thomason, Greenwood, S. C., is the general contractor, and the project is under the general direction of the U. S. Army Engineers.

The pipe, a product of Republic Steel Corporation, Youngstown, Ohio, will be assembled from No. 5 gage galvanized Toncan iron plates, with 6-inch corrugations, which will receive an asphalt coating in the field. A total of 2,044 individual plates will be required, assembled into seventeen "barrels," each equipped with an automatic flood-gate at the discharge end. The gates alone will weigh 4 tons each.

This job is of particular interest, not only because it is believed to be the largest order ever placed for sectional plate pipe, but on account of the difficult conditions encountered. Unstable footing made the use of concrete impractical because of the large amount of timber piling required. The sectional plate pipe, because of its comparatively light weight, obviates the necessity for elaborate foundation work for larger culverts on flood control projects.

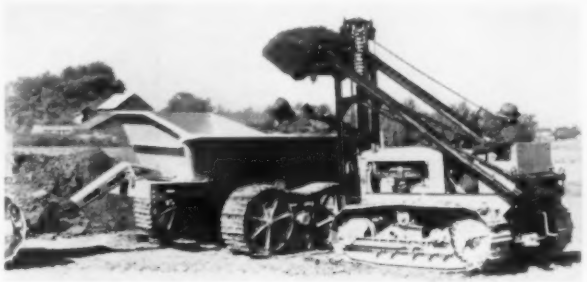
Harry W. Clark Opens Office as Consulting Engineer

Harry W. Clark, for many years Director of the Lawrence Experiment Station of the Massachusetts Department of Public Health, has opened an office at 11 Beacon Street, Boston, Mass., to engage in consulting practice in sanitary engineering and chemistry as applied to water-supply treatment and purification, sewage and industrial waste disposal, and other sanitary problems and investigations. Mr. Clark's work at Lawrence, and also as Director of the Water and Sewage Laboratories of the State Department of Public Health in Boston, is well known throughout this country and abroad. He has been retained by many cities, towns, corporations, state and municipal boards in different parts of the country in connection with sanitary problems.

A New Front-End Shovel Loader

A handy tool which is not new to the construction industry but which contains new features has been announced jointly by the Allis-Chalmers Manufacturing Co., Tractor Division, Milwaukee, Wis., and Frank G. Hough Co., 919 North Michigan Avenue, Chicago, Ill. This new front-end shovel loader, manufactured by Frank G. Hough Co., is mounted on an A-C Model M tractor which is equipped with a wide-gage long track, and the truck frames are rigidly mounted to eliminate all oscillation. This makes it possible to mount the loader more solidly. All thrusts are taken on heavy channels supported on the long truck frame. There are five truck rollers per track, which materially spreads the weight of the loader.

There are many uses for the loader in both the municipal and the contracting field. At a recent working test, this equipment opened a new gravel pit and loaded to trucks an average of 32 cubic yards per hour. The standard 1/3-yard bucket can be removed and a bulldozer blade installed, or a larger bucket can be used for handling snow and other light material. The unit is hydraulically controlled and is completely equipped with counterweights and a rear starting crank. The drawbar is clear for use on any pulling work.



THE NEW ALLIS-CHALMERS FRONT-END TRACTOR-MOUNTED SHOVEL LOADER

An Outdoor Folding Metal Chair

Compact outdoor folding chairs particularly adapted to parks, playgrounds, athletic fields and other places where a durable chair is required, have been announced by the Stewart Iron Works Co., Inc., Cincinnati, Ohio. Twelve of these Foldwell chairs pack into 12 inches; 105 require only a space of 4 x 4½ feet. The height and pitch of the seat and the angle of the back panel have been designed for maximum comfort. Bracings and all connections are securely riveted, not welded. The legs are braced with diagonal bracing. The chairs are easily opened and closed by simply lifting or lowering the front of the seat. This chair is safe and cannot tip or collapse when pressure is applied, even at the extreme outer edge of the seat. They are furnished in brown, jade green, gold, mahogany, aluminum and red, and any special color on quantity orders of 200 or more chairs at no extra charge.

AN IMPROVED TECHNIQUE IN APPLYING FILLER

1 *A dilute "separating" mixture is sprayed on the brick.*

2 *Asphalt filler is generously applied, effectively filling and sealing the joints.*

3 *The excess asphalt is cut cleanly from the top of the pavement and is then re-used.*

4 *Note (Magnified Section) the cleanness of the surface of this finished job (Columbus-Lancaster, O., Federal Aid Proj. No. E-484-D) and the excellent non-skid value thus obtained.*

Visit Our Booth

Highway Exhibit
AMERICAN ROAD BUILDERS ASSOCIATION
January 22-25, 1934
Stevens Hotel
Chicago

SHOWN pictorially above, is a new method of applying and removing excess asphalt filler in the contruction of brick pavements.

This method has been increasingly employed with excellent results by builders of brick pavements during the last two years and has much merit in ease of application, economy of materials and certainty of a well-finished job.

In a few words, the spray prevents adhesion of the asphalt to the top of the brick where it is not needed but allows a perfect asphalt bond between the sides of each brick.

Inasmuch as this new technique contributes to ease of construction, as well as to developing the best traffic qualities of the pavement, the National Paving Brick Association is pleased to thus bring it to the attention of the roadbuilders of the country.

Detailed specifications for this method are available from National Paving Brick Association, National Press Building, Washington, D. C.

BRICK PAVEMENTS PUT MORE MEN TO WORK SAVE TAXPAYERS MONEY

Equipment for the New Fort Wayne Water Works

On pages 47-49 of the December issue THE AMERICAN CITY, published an article by R. L. McNamee, of Hoad, Decker, Shoecraft and Drury, consulting engineers, Ann Arbor, Mich., on the Fort Wayne, Ind., filtration plant and pumping station known as the Three Rivers plant. Some of the construction quantities in this plant have just come to the attention of the editors, who believe these items are of particular interest. There are in the plant over 21,000 square feet of hollow tile, nearly 28 miles of concrete piling, nearly 90,000 cubic yards of excavation, nearly 200,000 cubic yards of backfill, and nearly 28,000 cubic yards of concrete. In addition there are nearly 100 carloads of reinforcement steel, over 50 carloads of pipe, 7,300 windowpanes, or 11,000 square feet, 1 1/3 acres of roof surface, about 600,000 bricks, and over 75,000 square feet of stone work, or 1¾ acres.

The following companies furnished equipment and materials for the Three Rivers Plant: Automatic Cone Valve Co., Mattoon, Ill., cone valves; Simplex Valve & Meter Co., Philadelphia, Pa., meters and gages; Fuller Co., Catasauqua, Pa., chemical handling equipment; The Western Gas Construction Co., Fort Wayne, Ind., valves; General Cable Corp., Chicago, Ill., electric cables; Roberts Filter Mfg. Co., Darby, Pa., filter equipment; Omega Machine Co., Kansas City, Mo., chemical feeding equipment; Republic Steel Corp., Youngstown, Ohio, Toncan iron plates; The Dorr Co., Inc., New York City, sludge removal mechanisms; Alco Products, Inc., New York City, Toncan iron pipe fabrication; Flinn & Dreffein Co., Chicago, Ill., carbon dioxide equipment; Cutler-Hammer, Inc., Milwaukee, Wis., valve controls; Raymond Concrete Pile Co., Chicago, Ill., concrete piling; Byron Jackson Co., Oakland, Calif., centrifugal pumping units; Michigan Valve and Foundry Co., Detroit, Mich., valves; Worthington Pump & Machinery Corp., Harrison, N. J., centrifugal pumping units; General Electric Co., Schenectady, N. Y., electric generator and switchboards; The James Leffel & Co., Springfield, Ohio, water wheel; Wallace & Tiernan, Newark, N. J., chlorine and ammonia equipment; Fisher Scientific Co., Pittsburgh, Pa., laboratory equipment; Bass Foundry & Machine Co., Fort Wayne, Ind., boilers and structural steel; Lynchburg Foundry Co., Lynchburg, Va., cast iron pipe; Whiting Corp., Harvey, Ill., crane; Warner Elevator Co., Cincinnati, Ohio, elevators; Joslyn Mfg. & Supply Co., Fort Wayne, Ind., reinforcing steel, and S. R. Dresser Mfg. Co., Bradford, Pa., pipe couplings.

Brady of Jenkins Bros., Dies

Arthur Eugene Brady, Vice-President and Treasurer of Jenkins Bros., New York City, manufacturers of Jenkins water-works valves, died on November 4 at his home in New York City. He had been in poor health for several years, but during this time had maintained an active interest in the tasks of his office.

Municipal Ownership of Public Utilities

According to a report of Burns & McDonnell Engineering Co., consulting engineers, Kansas City, Mo., Ketchikan, Alaska, has overwhelmingly voted for municipal ownership of its water plant, light and power plant and telephone system, subject to an appraisal of the three utilities to be made by Burns & McDonnell Engineering Co.

Milwaukee has three times voted favorably on a referendum vote on owning its own light and power utility, but until the recent re-election of its socialistic mayor the administration has not given its entire support to municipal ownership of the utilities. Now, with the successful operation of the municipal water plant, municipal garbage incinerators, and municipal sewage disposal plant, together with the municipal street lighting plant, the city feels encouraged toward undertaking municipal ownership of the light and power utility. Burns & McDonnell Engineering Co. has been selected to make a complete study and report, with estimates, covering the improvement, which will probably cost in the neighborhood of $40,000,000 for the complete plant. However, the present units for immediate installation will cost about $18,000,000.

A Transparent Cure for Concrete Pavements

Practically all the methods of curing concrete pavements have certain disadvantages. Some highway engineers have expressed a desire for a curing medium that leaves the surface of the concrete in its original form with no discoloration, and yet adequately protects the concrete against evaporation during the period of hydration. Ritecure, a new material developed by The Johnson-March Corporation, 29-28 Hunter Avenue, Long Island City, N. Y., is transparent, does not combine with the concrete surface or stain or change its physical appearance. It has sufficient elasticity to bridge any cracks and fractures due to displacement or settlement. Ritecure is supplied in the form of a milky-white liquid with viscosity only slightly greater than water. When sprayed on the green concrete, it has the appearance of white paint. Although the finished material is transparent, it is essential that a color be present during the application in order that the operator and inspectors may see that the surface to be treated is adequately covered. The color starts to dissipate within ten or fifteen minutes, depending on the temperature and humidity, and disappears entirely within a few hours, leaving the surface of the concrete covered with a transparent, flexible membrane or film which is impervious to water and is not affected by the elements.

A waterproofing medium—and a concrete cure is a form of waterproofing that prevents evaporation rather than absorption—to be fully efficient must have the ability to adhere to vertical surfaces. Ritecure will adhere to vertical and horizontal surfaces with equal facility. It is sprayed by means of a single nozzle pressure spray outfit at the rate of approximately 40 square yards per gallon of material. Whether the concrete has a troweled finish or is roughed with a broom or screed, every portion is protected by a flexible film; and as the concrete expands or contracts, the film moves with it. Although it is in close contact with the surface, following every inequality, it makes no combination with the concrete, and after a few weeks forms a tough varnish-like finish. In the case of pavement slab, when the curing period ends and traffic is admitted, the film gradually wears off under the grinding of automobile tires. The treated surface is claimed to have better tractive qualities than the plain surface, resisting skidding.

Test sections have been satisfactorily completed on concrete highways in New York, New Jersey, Massachusetts and Maine, and on the paving in the Babor-Comeau contract for the New York Central Railroad at the foot of West 60th Street, New York.

The Code for the Motor Fire Apparatus Industry

The Code of Fair Competition for the Motor Fire Apparatus Manufacturing Industry was signed by the President of the United States on November 8, 1933, and became a law on that date. The Code Authority consists of the following: Chairman, Geo. R. Stephens, Buffalo Fire Appliance Corp., Buffalo, N. Y.; Sol Cook, Boyer Fire Apparatus Co., Logansport, Ind.; Charles H. Fox, Ahrens Fox Fire Engine Co., Cincinnati, Ohio; C. B. Rose, American LaFrance & Foamite Corp., Elmira, N. Y.; H. B. Spain, Seagrave Corp., Columbus, Ohio; and Secretary, W. J. Parker.

Mueller Purchases Columbian Iron Works

The Mueller Co., Decatur, Ill., which recently established a Pacific Coast factory at Los Angeles, Calif., has now purchased the Columbian Iron Works, Chattanooga, Tenn., making it possible for the enlarged Mueller organization to supply water works and municipalities with anything in this line from a ¼-inch stop to fire hydrants, and to gate valves from 2 inches up to the largest sizes.

The Columbian Iron Works was taken over early in December and plans are now under way to improve the property with substantial buildings and place the business under Mueller Co. manufacturing methods. The methods and general process of the Columbian Iron Works have always been similar to those of the Mueller Co., as a result of which they enjoy the full confidence of the waterworks and municipal trade.

Adolph Mueller has been elected President of the Columbian Iron Works, Wm. E. Mueller, Executive Vice-President and Treasurer, H. M. Lofton, Vice-President in charge of sales and development, L. W. Mueller, Vice-President, Robert Mueller, Vice-President, and Merrill (Mac) Lofton, Secretary. This new addition to the Mueller manufacturing plants will continue under the name of Columbian Iron Works, Chattanooga, Tenn., Division of Mueller Co., Decatur, Ill.

THE JOHNSON-MARCH CORPORATION

29-28 Hunter Avenue, Long Island City, N. Y.

BRANCH OFFICES:

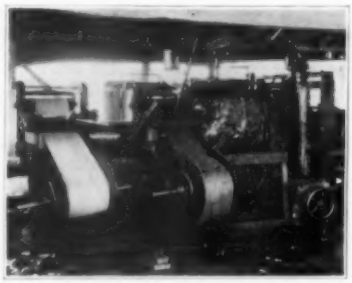
2523 Wilshire Blvd. Houston, Texas | 7012 Stanford Avenue Los Angeles, Cal. | Russ Building San Francisco, Cal.

"Hunt Process" is a heat-processed asphaltic compound which, when sprayed on wet concrete, forms a tough, impervious film that waterproofs the surface and **retains all of the water in the mix.**

"Ritecure" is a new transparent, flexible curing medium. When sprayed on wet concrete, the surface is covered with a transparent, flexible film impervious to water. "Ritecure" protects the concrete against evaporation during the entire period of hydration, yet does not combine with the concrete surface nor stain nor change its physical appearance. It adheres to either vertical or horizontal surfaces with equal facility and is admirably adapted to the curing of all concrete structures, as well as pavements and sidewalks.

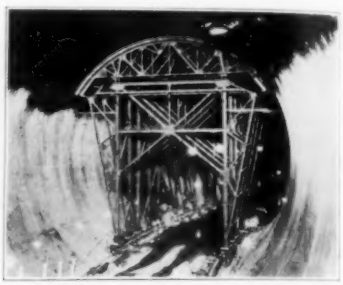
"McEverlast" is a complete line of asphaltic protective coatings for underground pipe lines, that are tough, flexible, resistant to abrasion and electrolysis, and highly resistant to acids, alkali or salt solutions. They may be mechanically or manually applied.

Illustrated literature and laboratory reports on all the above products will be furnished on request.



Machine coating pipe with alternate layers of asphalt and fabric

Applying Ritecure on a state highway



Hoover Dam—Diversion Tunnel cured with Hunt Process

THE LOW-COST, LONG-LIFE FLOOR COVERING

A bell clangs . . . the "thundering herd" rushes . . . a crashing, crushing, pushing, shoving mass of Junior-Hi humanity . . . dashing madly for classrooms! Many times a day . . . in and out . . . this is what happens at a famous new California Junior High* School! Devoid of stairways . . . this modern school uses ramps. And these ramps are MASTIPAVED . . . to provide a slip-proof, accident-proof, *fool-proof* underfooting for these healthy young animals! Extremely tough . . . highly resilient . . . water and rot proof . . . MASTIPAVE is the most economical, longest-wearing floor protection for any heavy-traffic use. Write for Booklet "AC".

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MASTIPAVE

THE STANDARD NEON SAFETY FLASHER WITH UNDERGROUND BASE

A New Line of Safety Flasher Signals

Neon illuminated flashing road signs that operate at a cost of only one cent per twenty-four hours for current are the latest development in safety signals announced by The Lakewood Engineering Co., Columbus, Ohio. The signals are entirely self-contained and can be installed anywhere without wiring or cables, being operated by a special type Willard storage battery which provides the fixed voltage needed for signal operation for uninterrupted periods of either six- or fifteen-month operation without adding water or recharging. This is made possible by the fact that the special battery has a shelf discharge of less than 8 per cent in 1,000 days. A larger battery is used for the 15-month operation. Batteries are rechargeable during an estimated life of six to ten years.

The safety flasher motor used in the units is of positive, clock-type mechanism, fully enclosed and insulated. According to the Lakewood Company, this motor is capable of operating under all changes of temperature and humidity, in any position and under conditions of severe oscillation and vibration. Both battery and flasher are usually mounted in the base of the sign underground for greater safety. Where underground mounting is impractical, a battery-inhead type is furnished. Illumination is produced by neon tubing behind the cut-out letters and symbols in the cast aluminum sign face, which are shielded with shatter-proof glass.

Except for continuous heavy traffic intersections where the expense of "stop and go" signals is justified and where they cause no unnecessary delays, safety flasher signals provide a system of traffic control with a day and night visibility and degree of emphasis unobtainable with other types of signs. Not being dependent on reflected headlamp beams, the faces are mounted 7½ feet above street level where they cannot be hidden by parked or traveling cars ahead. At night the neon illuminated signal is said to be visible to approaching drivers at one mile, and legible to the average eye at 500 feet.

In addition to the standard street and highway signs, the Lakewood Company also manufactures all types of built-to-order signs, safety zone markers, airport boundary lights, directional markers, hydroplane landing markers and buoys for neon illumination.

An Improved Gas Meter for Sewage Disposal Plants

Many municipalities are using gas from sludge digesters at sewage treatment plants as a source of heat or power at the plant. If accurate records as to savings effected are to be kept, it is necessary to measure the gas produced. The Pittsburgh Equitable Meter Co., Pittsburgh, Pa., has recently announced an improved gas meter for use at sewage treatment plants. After a careful study of various conditions and thorough tests in both the laboratory and the field, this company has announced the Emco gas meter, built in several sizes to take care of all volume requirements. All the features embodied in standard Emco meters, produced for some time by the Pittsburgh Equitable Co., plus additional features and improvements required for this particular service, have been incorporated in the Emco sludge gas meter.

An Installation of Sparling Meters in Chicago

An interesting main-line meter installation is being made by the city of Chicago, which has ordered a Sparling main line meter, made by R. W. Sparling, 101 Park Avenue, New York, to be set in the 12-foot intake shaft of the Dunne crib 2 miles out in Lake Michigan. This will measure the flow and will be used as a control at the chemical treatment station.

New York City has also recently installed a Sparling meter in the 14-foot Croton aqueduct at the Dunwoodie Chlorination plant.

R. W. Sparling, manufacturer of these main-line meters and recording equipment, announces a very encouraging increase in business since the opening of the New York and Chicago offices.

MOVING 600 YARDS OF SAND PER 12-HOUR DAY WITH A CATERPILLAR DIESEL SEVENTY-FIVE AND A LaPLANT-CHOATE SCRAPER, ON A DAVIS CONSTRUCTION CO. PROJECT ON LONG ISLAND, N. Y.

Donaldson Gets Yonkers Contract

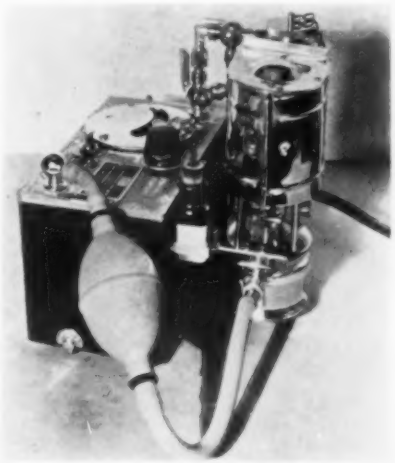
The Board of Contract of Yonkers, N. Y., recently awarded to the Donaldson Iron Co. the contract for furnishing the Water Bureau with 1,300 lengths of iron pipe for varying diameters. The contract calls for 300 lengths of 6-inch pipe, 700 lengths of 8-inch pipe, 200 lengths of 12-inch pipe, and 100 lengths of 18-inch pipe.

An Inflammable Gas Indicator for Manhole Exploration

The U. C. C. all-service gas indicator is a new unit announced by The Linde Air Products Co., 30 East 42nd Street, New York. It supplements two earlier indicators, the U. C. C. methane detector and the U. C. C. combustible gas indicator, and is designed primarily for indicating how flammable or explosive an atmosphere is. It shows the presence of poisonous gases and vapors and indicates any deficiency of oxygen.

This machine may be used safely for testing manholes and locating underground leaks in gas lines. Like the earlier instruments, it is equipped with a body harness, is simple to operate and is complete and ready for instant use.

City and state departments for sewer inspection and emergency police and fire service find it of wide use.



THE U.C.C. ALL-SERVICE GAS INDICATOR

Holophane
Trade Mark

HOLOPHANE
Alone
Shapes the Light to the Street

Holophane Asymmetric Refractors shape the light to the street—to the character of the roadway—to the demands of traffic. They are most efficient because they provide illumination *only* where needed: most economical because you pay only for *useful* light. Holophane Co., Inc., 342 Madison Ave., New York. Canadian Office, Toronto. Works, Newark, Ohio.

HOLOPHANE REFRACTORS
FOR STREET AND
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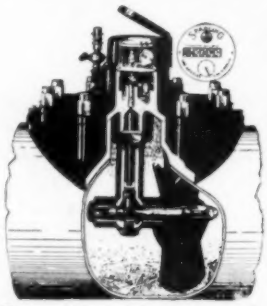
ANALYZE YOUR COSTS



UNTIL you have figures covering total production, you can never analyze operating costs, or know your losses in distribution, maximum and minimum demand or production per kilowatt hour.

These facts are always available to you with a SPARLING Main-Line Meter. And with Rate-of-Flow or Metrograph Recording you have a definite, accurate, day-to-day record for reference at all times.

SPARLING Main-Line Meters are ACCURATE, ECONOMICAL and RELIABLE. They are sold under an absolute guarantee. Since they are not affected by frost, no special provision is necessary against freezing.

USED BY A THOUSAND WATER DEPARTMENTS FROM MAINE TO CALIFORNIA

Bulletin No. 302 covering meters and recording equipment sent on request.

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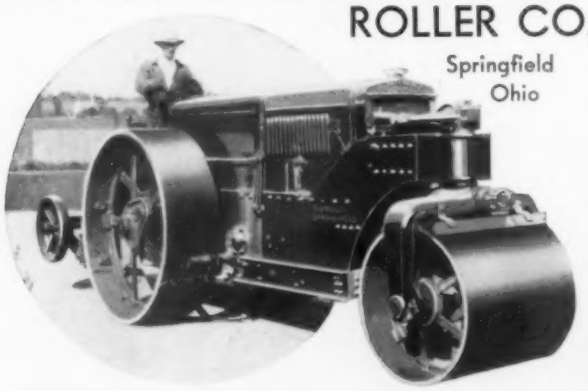
One look tells the story—

Just take a look at one of these big **BUFFALO-SPRINGFIELD** rollers—any model you like. You can't help seeing that, every step of the way, the manufacturers have kept in mind "first and foremost" the necessity for **RUGGEDNESS**—for a long life and a strenuous one!

Considering the great success of **BUFFALO-SPRINGFIELDS** in all kinds of roller work from the heavy compaction demanded in highway construction and maintenance to the light compression work in parks, on tennis courts, etc.—considering, too, the great variety of models and sizes of **BUFFALO-SPRINGFIELDS** that are available, we believe you will agree with us that you can safely specify a **BUFFALO-SPRINGFIELD** and that you can be sure you will find just the model and size that will meet your requirements. (Shall we send you our illustrated booklet?)

THE
BUFFALO-SPRINGFIELD
ROLLER CO.
Springfield
Ohio



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FOR WATER AND GAS

ALSO SPECIAL CASTINGS AND FLANGE WORK

Outdoor Lighting

A Section of *The American City*
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

Newton Lights the Boston-Worcester Turnpike

By **SINCLAIR WEEKS**
Mayor, Newton, Mass.

OF all the highway construction projects which the state of Massachusetts has undertaken during recent years, the most ambitious and important is the building of a super-highway from Boston to Worcester. The old road from Boston to Worcester, following what was formerly U. S. Route 20, covered a distance of 42 miles. It is a two-lane road for the most part, narrow and crooked, with sharp curves and steep grades, although for short stretches it widens into three lanes. Furthermore, it passes through the center of many small cities and towns greatly impeding speedy movement of traffic.

The new road, 39 miles in length with 31.8 miles of new construction, is laid out in practically a straight line, with long-radius curves and small grades, avoiding all centers of any size, permitting thereby the unhampered flow of traffic. In order to pass easily the great amount of traffic which traverses this route—with construction not yet completed, the flow is 3,000,000 vehicles a year—the highway is built of two roadways separated by a grass plot which varies in width. On a right-of-way varying from 78 feet to 120 feet wide, two 20-foot concrete roadways have been constructed from Framingham west, and two 30-foot roadways from Framingham east, at a total cost of approximately $6,500,000. At all important intersections where feasible, crossings have been made by grade separations and clover-leaves.

Speed vs. Vision

Because of the character of the road, very high speeds are maintained, creating a hazardous condition when unlighted objects are in the roadway. While the speed limit in the state is set at 30 miles per hour, speeds of 40 and 45 miles an hour are allowed because of the super-highway construction, and these are frequently exceeded to 60 and 70 an hour. The approved stopping distance in Massachusetts at 30 miles an hour is 100 feet, and at 45 miles an hour is 202 feet, while the maximum beam from approved headlights strikes the road in many cases only 172 feet ahead of the car. Under such conditions a man driving within the speed limit can see an object in the road with his headlights with a margin of only $1\frac{3}{4}$ seconds before he has to act to stop his car. Furthermore, at 45 miles an hour he has no margin whatsoever, and at 50 miles an hour the braking distance is greater than the throw of his headlights. Of course, it can be argued that a car should not be driven faster than vision allows, but that is little consolation after a fatal accident has occurred.

Consequently, with five fatal accidents in which five people have been killed, all at night, since the building of the highway, and with no fatal accidents on a mile stretch which has been lighted, we decided for the safety of our citizens to light the Boston-Worcester Turnpike

THE CHESTNUT STREET OVERPASS AT NEWTON, MASS., IN THE BOSTON-WORCESTER TURNPIKE, SHOWING LIGHTING POLES AND BRACKETS

For your comfort *and* pleasure

DETROIT'S NEWEST DOWNTOWN HOTEL

has now been completely renewed—inside and out—from the beautiful, spacious lobby to the roof—everything has been completely renovated.

Guest rooms entirely redecorated. Furnishings renewed or re-upholstered.

LARGE, AIRY OUTSIDE ROOMS
Each with private bath, from

$2.50 Single $3.50 Double

Garage in Connection

THE HOME OF
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COFFEE SHOP

CLUB BREAKFASTS
30c 50c 75c

LUNCHEON
35c 40c 50c 75c

DINNER
75c $1.00 $1.25

Music by Jack McCay's Orchestra

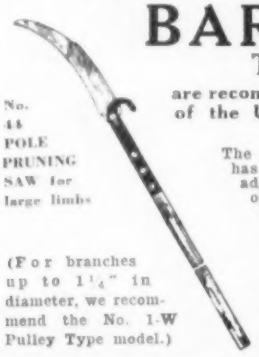
HOTEL DETROIT-LELAND

Cass at Bagley Avenue

For Proper Pruning, Use Proper Tools

BARTLETT TREE TOOLS

are recommended by users in all parts of the United States and Canada.



No. 44 POLE PRUNING SAW for large limbs

(For branches up to 1¼" in diameter, we recommend the No. 1-W Pulley Type model.)

The No. 44 POLE SAW shown here has a 16" blade. The saw can be adjusted to three angles to suit the operator's position. Made in various sizes, but for general use, we recommend the 16-foot pole in two sections easily joined together with our quick change sleeve.

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Box 14, 3003 E. Grand Blvd.
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for every purpose

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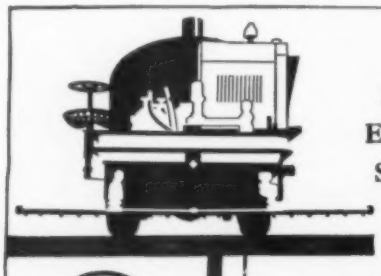
THE STEWART IRON WORKS CO., INC.
211 Stewart Block Cincinnati, Ohio



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Do You Want Prices on Anything?

Readers of THE AMERICAN CITY desiring to secure catalog or price lists on any sort of machinery equipment or supplies for municipal or county work are invited to state their wishes to the Catalog and Price List Department, The American City, 470 Fourth Ave., New York. One letter to us will secure you the information you desire free of all charge, and at a considerable saving of time and correspondence.

During January we hope you will remember to mention THE AMERICAN CITY

NIGHT VIEW ON THE BOSTON-WORCESTER TURNPIKE AT NEWTON, MASS.
Looking toward Boston from the Center Street overpass

throughout the city of Newton. To take care of extraordinary conditions it should have a type of illumination such that the driver of an automobile, even though traveling at the excessive rate of 70 miles an hour, could see an object in the road far enough ahead to stop with safety in the approved distance of 445 feet.

Of the 24,000 feet of this highway lying in the city of Newton, the through road is 14,500 feet long, while the by-passes and clover-leaves of six major intersections are 9,500 feet in length. Of these six intersections, three are over- or under-passes, while the others are at grade.

As one travels from Worcester to Boston, there are no really thickly settled districts—with the exception of the first mile in the town of Shrewsbury, just east of Worcester—until the Newton line is crossed. Through Newton the superhighways follow the line of what was formerly Boylston Street, with the Boston-Worcester car tracks down the center, and 550-volt series lamps at every car stop.

G. E. Stuart, the Street Commissioner of the city, early realized the menace, particularly to pedestrians, of such a high speed thoroughfare, particularly if unlighted. He called in H. B. Kane, of the Edison Electric and Illuminating Co., and E. M. Crawford, of Mr. Halvorson's office of the General Electric Co., asking them to submit recommendations for lighting the highway. These were submitted in the form of a pin map and a written report, and were approved and adopted by the city.

Details of the Installation

The Edison Company proceeded accordingly, installing 35-foot carrying poles of Southern hard pine, treated with creosote. Ornamental standards are not used, since it is necessary to have line poles along the highway and, in accordance with the Street Lighting Code of the Illuminating Engineering Society, it is better to use line poles where they exist than to install additional standards. Conforming further to this I.E.S. Code, the luminaires are mounted at a height of 22 feet to the light center, minimizing glare. For practically the entire length in Newton, the roadway consists of two 30-foot roads separated by a 10-foot grass plot. In order to get the light out over the road where it is used to best advantage and where it will be of actual value in giving a specular background for silhouettes on wet nights, 8-foot brackets are used, allowing the luminaire to overhang the road by 7 feet. The law requires that the face of the pole be 12 inches back of the face of the street curb.

Following the I.E.S. Code still further, to utilize most efficiently as much of the 6,000 light units or lumens per lamp as possible, 104 General Electric Form 52 Novalux luminaires with the 11-inch B-sym-etric rippled bowl refractors are mounted at an average linear spacing of 140 feet staggered on the through road, and 54 on the by-passes and clover-leaves at an average spacing of 174 feet. This luminaire of aluminum, cast in simple yet graceful lines, has an external adjustment by which the lamp can be focused with respect to the prisms of the refractor. The unit has an over-all efficiency of 68½ per cent, and in this particular case a very high utilization efficiency. In other words, a comparatively high percentage of the generated light strikes the roadway. This unusually high value of efficiency is obtained because of the design of this refractor. On the house side of the refractor are totally reflecting prisms which serve a dual purpose, namely, shading the houses in back of the luminaires and redirecting this backward light to the road surface. Furthermore, some of the light normally falling across the street is also redirected onto the road surface. Of course, the high utilization efficiency represents a combination of efficient luminaires and correct mounting well out over the roadway.

Because of the sharp cut-off obtained with the refractor above the 75° angle, there is no confusion to the eye from lights on the ramps, which in some places are at eye-level on the main road. Without the refractor it would be necessary to shade the side road lights from the main road. The refractors used are the G. E. rippled bowl type manufactured by Holophane Company, Inc.

Views of the Installation

About two months were consumed in accumulating and installing the equipment. As if to cement Mr. Stuart's ideas as to the hazards of an unlighted road, three people were killed before the lighting was installed, resulting in an economic loss far greater than a year's cost of lighting. The lights were turned on the night of November 3, and the accompanying night view was taken then. The photograph is taken looking toward Boston from the Center Street overpass, with the Parker Street underpass in the distance.

In all, there is a total load of about 50 kw supplied by two constant current transformers of the capacitor type. The circuits are straight series, 6.6 ampere, and are controlled by astronomic time switches and protected by Novalux protectors.

Owing to the rolling character of the country, there are many views of a long stretch of lighted highway on which visibility is practically perfect. Such an installation should certainly prove an incentive to all highway lighting, and particularly along the Boston-Worcester Turnpike, where there are only 60-, 80- and 100-candlepower lamps, with exceptions in Wellesley, lighted with 6,000-lumen lamps on ornamental standards at 12 feet, and in Shrewsbury lighted as in Newton except for shorter brackets and 10,000-lumen lamps.

It is a foregone conclusion that the city of Newton will profit economically, as have other municipalities which have properly lighted their heavy traffic thoroughfares.

GENERAL ILLUMINATION ENGINEERING CO.

Cincinnati, Ohio · · · · · · Carew Tower

STREET LIGHTING
- ZONING SURVEYS
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Seeing Value is not accidental . . . it must be built into your lighting system

To provide light for street and highway illumination is comparatively easy, but to provide *Seeing Ability* is an entirely different matter. *Seeing Ability* is not obtained by simply using energy and lights; it is the result of *Seeing Value* built into the street lighting system. If you are anxious to get the utmost *Seeing Ability* from your street lighting, at no increase in cost, the Liteindex System of Specified Illumination will show you the way. Full details on request. General Illumination Engineering Company, Cincinnati, Ohio.

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MAINTENANCE EQUIPMENT
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"HVASS" SPREADERS

Conquer Slippery Pavements

Spread full width street or road at one time or any part thereof.

—SPREAD—
SAND, ASHES OR CINDERS

Can be quickly attached or detached.

Write for descriptive bulletin.

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Portable Asphalt Maintenance Plants

A PORTABLE UNIT WITH A CAPACITY OF 400 YARDS PER DAY

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Stationary — Railway — Portable and Semi-Portable Plants

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Capable of materially increasing kilowatt-hour sales and reducing operating costs, which means increased net revenue **is available for position** in charge of a Municipal Electric Light Plant, in a city from 3,000 to 15,000 population. Has had extensive operating and engineering experience. If your plant is in debt, can put it on a basis where it will become debt free and rates reduced. Inquiries invited from cities having need for such an executive.

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WASHINGTON

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FEBRUARY, 1934

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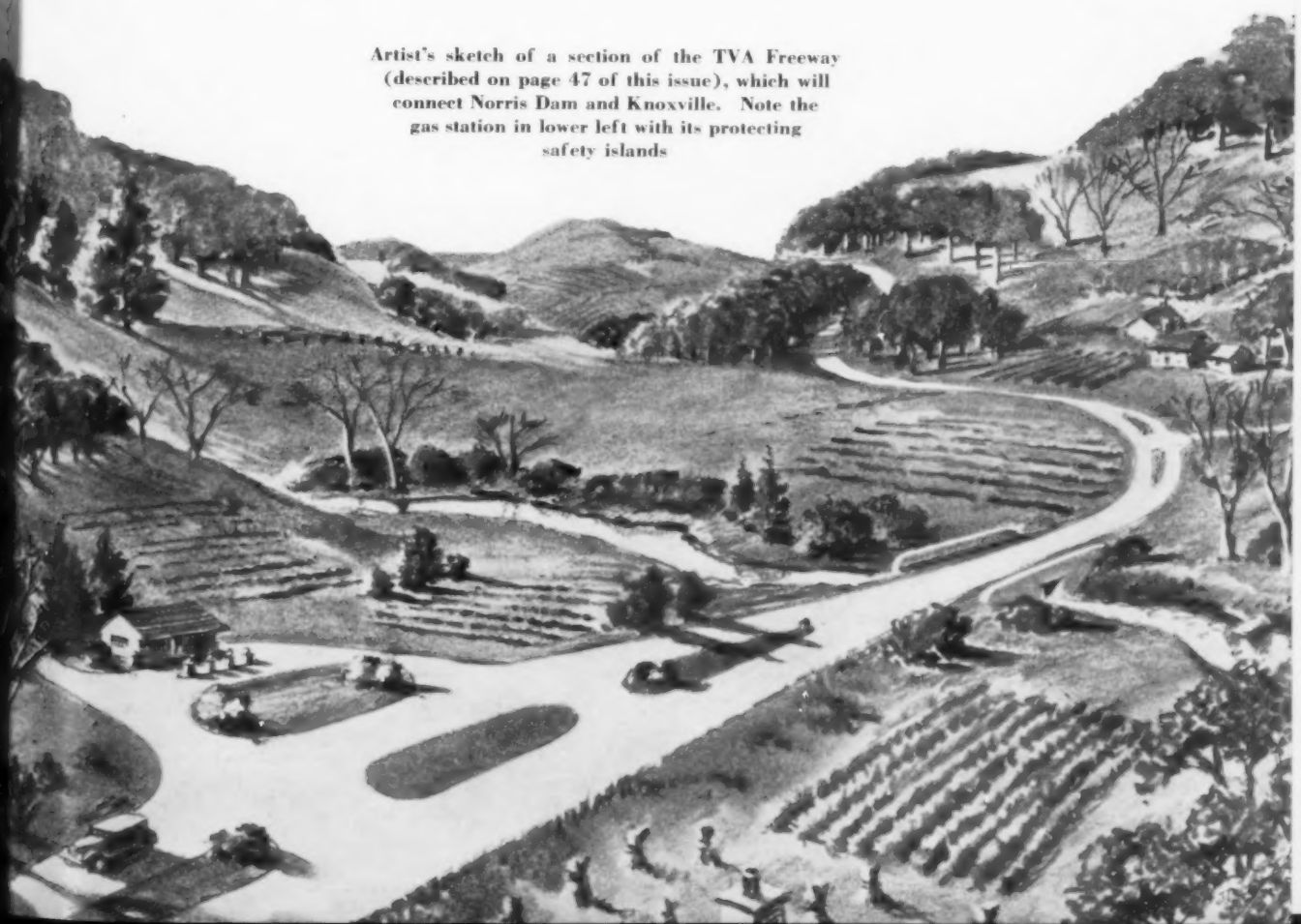
UNIV. OF MICH.

The American City

Needed from Congress: Two Billions More for National and Local Public Works

With practically all of last year's appropriation of $3,300,000,000 allotted; with approximately $2,900,000,000 of additional applications now before the Public Works Administration; and with the construction industry still far below normal capacity, there is urgent need for favorable action by the present session of Congress on the two-billion-dollar public works appropriation sponsored by the United States Conference of Mayors.



Artist's sketch of a section of the TVA Freeway (described on page 47 of this issue), which will connect Norris Dam and Knoxville. Note the gas station in lower left with its protecting safety islands